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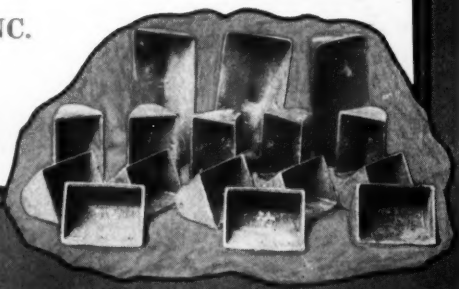

February, 1923

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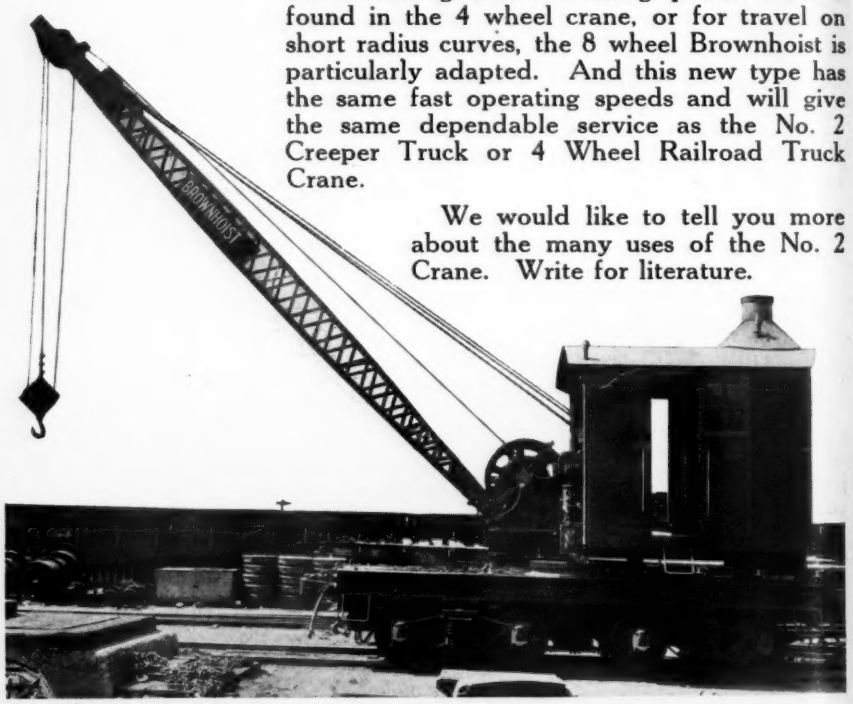

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A Monthly Journal for Producers of Sand, Gravel, Stone, Cement, Gypsum and Lim

VOL. 7 CHICAGO, ILL., FEBRUARY, 1923 No. 5

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The Oakland Building Material Company some time ago found that with one Barber-Greene Bucket Loader and one operator they could replace two old loaders, of another design and type, and their two operators.

In an eight-hour working day on December 15, the Barber-Greene made a record of 105 four-yard truck-loads. In addition, when one of the trucks became mired and sank hub-deep into mud, the Barber-Greene was run into the mud and pushed the truck out to better going.

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Pit and Quarry

Vol. 7 Chicago, Ill., February, 1923 No. 5

Atmosphere Clarified

FOR some time trade associations have been asking what they might and might not do—and no one seemed to know the answer.

Things which the Government asked them to do in time of war the Government has later prosecuted them for in time of peace—such as the districting of the producing area of the country, which was one of the counts against the Gypsum Indistries Association, a decree in which case was entered January 3.

Trade organizations generally will therefore feel themselves greatly obligated to the Gypsum Industries Association (now reorganized as The Gypsum Industries) for pushing the case to an issue and consenting to a degree which defines without possibility of misconstruction the rights and limitations of such a group.

Here, then, are the things for which manufacturers in any one line may properly organize, as expressed in the gypsum decree:

(a) To advance or promote the use of gypsum products by research, publicity, advertisement and any other activities of like character.

(b) To deal with engineering and trade problems pertinent to the industry for the purpose of advancing the use of gypsum products.

(c) To carry on educational work pertinent to the industry by fellowships in various schools and colleges for research; experimental and research work in and through institutions of learning, scientific bureaus and societies; and to provide for lectures and the writing and reading of papers upon subjects pertaining to the industry.

(d) To maintain a traffic bureau to furnish traffic information upon specific request from published freight tariffs lawfully issued by the carriers, and to assist the industry in transportation questions before Federal and State Commissions and other bodies dealing with questions of transportation and with common carriers.

(e) To deal with improved methods of plant and mine operation including sanitation, safety appliances, accident prevention, labor, plant and mine development, housing conditions, insurance and methods of accounting.

(f) To maintain a credit bureau for the sole purpose of furnishing credit information.

And on the other hand here are the things such associations are enjoined and restrained from doing:

(a) Agreeing to fix or establish by agreement among themselves the prices to be charged for said gypsum products.

(b) Agreeing among themselves in any manner whatsoever to charge purchasers of said gypsum products uniform prices or doing by agreement any act or acts which will result in maintaining uniform prices.

(c) Agreeing among themselves in any manner whatsoever to advance or decrease prices for their products to purchasers thereof.

(d) Agreeing among themselves in any manner whatsoever to advise or communicate with one another as to proposed advances or decreases in prices for their products to purchasers thereof or agreeing among themselves in any manner whatsoever to circulate among themselves in any way information concerning or relating to such proposed advances or decreases, or to the prices charged or to be charged.

(e) Doing any act or acts by agreement among themselves which will result in advising or communicating with one another as to proposed advances or decreases in prices for their products to purchasers thereof or in circulating by agreement among themselves information concerning or re-

lating to such proposed advances or decreases.

(f) Agreeing among themselves in any manner whatsoever to limit, curtail, restrict or otherwise control the amount of said product to be produced for manufacture at any time by any or all of the defendants or by doing by agreement among themselves any act or acts which will limit, curtail, restrict or otherwise control the production or manufacture of said products by any or all of the said defendants, such as the withdrawal of salesmen from a certain territory over stipulated periods.

(g) Agreeing among themselves in any manner whatsoever as to the territory in which any or all of the defendants may sell or otherwise dispose of their products.

(h) Agreeing among themselves in any manner whatsoever to effect any discrimination of any character, whether in prices charged or otherwise in favor of or against any purchaser of their products by reason of the fact that such purchaser is a mail order house, purchasing agency, cooperative buying association or so-called "Dealer," or for any other reason or doing any act by agreement among themselves to effectuate any such discrimination in favor of or against any purchaser for any reason, except of course that each defendant may independently of the other defendants select his or its own trade and dispose of his or its products to such persons and on such terms as he or it may choose.

(i) Agreeing among themselves to use a published credit list and credit information for the purpose of blacklisting an undesirable purchaser or for the purpose of putting the name of the purchaser on such list with the intent of the manufacturer who submits the name reserving the purchaser's business for himself.

(j) Agreeing to fix, establish, or maintain by agreement among themselves the terms, differentials, discounts or prices which should be followed by a dealer, jobber, or other middleman upon his re-sale to a consumer or by any such agreement the uniform discounts which should be subtracted by each manufacturer, as an inducement for cash payment.

(k) Agreeing among themselves to adopt or follow any price list, published or compiled, or caused to be published or compiled by themselves or by any newspaper, trade paper or periodical as a fixed price.

(l) Agreeing among themselves to enforce any arbitrary freight rates in excess of those lawfully made.

(m) Agreeing among themselves that certain individual manufacturers engage in the manufacture of a certain gypsum product of a certain definite composition, and that all other manufacturers desist from manufacturing a product of such composition.

(n) Aiding or abetting or assisting individually or collectively others to do all or any of the matters herein set forth and enjoined and restrained herein.

(4) That nothing herein contained shall be construed to restrain or interfere with the action of any of the said defendants, acting with respect to his or its own corporate or individual business property or affairs, or furnishing necessary information to their own customers in connection with bona fide sales of such products, or individually doing any of said acts or things done in good faith to meet competition when such action or the furnishing of such information is not made or done in concert or as the result of any agreement among themselves, or to save any patent rights of any of said defendants; and that this decree and any of its provisions or the entry thereof shall be without prejudice to the rights or interest of any of the said defendants in any proceedings which may be brought by or against them or any of them, except only any proceedings in this cause to enforce the terms of this decree.

The Easton Car & Construction Co. of Easton, Pa., has recently opened a new office in Harrisburg, Pa. This office will be under the personal supervision of Mr. Geo. D. Fraunfelder.

The Trinity Gravel Co. of Dallas, Texas, has been incorporated with a capital of $300,000. The incorporators are: D. G. Smith, D. S. Hartson and L. S. Brotherton.

The Neal Gravel Company of Mattoon, Ill., has purchased a gravel plant near Summit Grove, Ind. Including the production of this new plant the company has a daily capacity of about 85 cars of sand and gravel. H. E. Neal is general manager of the company and J. P. Cantlon is in charge of the sales.

Will the Alien Labor?

"RUNNING a republic takes a lot of talking, and it is a pity that a large and influential thinking class would sooner wear a muzzle than assume its proper position in the chorus," says Mr. Charles Piez, president of the Link-Belt Company.

"Don't be afraid of a few mistakes. Mr. Bryan has survived a lot of them. And don't be afraid of names. You are too practical to be called high brows, and too intelligent to be called intellectuals."

This is the way Mr. Piez got a grip on his audience at a recent banquet of the Engineers' Society of Western Pennsylvania, in Pittsburgh.

Then he started to tell them some of his views on labor and immigration. Not all of them will meet with whole-hearted support by those who demand foreign labor without regard to any considerations of a broader national character. But in the main we believe Mr. Piez has said something which the country needs to hear. Read these extracts:

You may not be conscious of it, but even in these days when industry is running at not over 75 per cent of capacity, common labor is hard to get.

Congress, remembering that America had a very large number of unassimilated aliens to embarrass it during the war, and recognizing that post-war conditions in Europe might lead to a very considerable increase in this number, has placed restrictions on both the number and character of immigrants.

Congress was sound in its intent, and though I am conscious that the lack of pick and shovel men is an embarrassment to industry, I question whether unrestricted immigration is not a more serious embarrassment to the nation.

We can't build up a strong, homogeneous nation by admitting large numbers from racial strains that have shown no capacity to adopt American ideals, and no ability to rise to the responsibilities of American citizenship. But if we find restriction desirable, even in the face of urgent industrial demand for men willing to work, why impose a literacy test that admits the Red propagandist, who can read but won't work, and excludes the man who wants to work and can't read? Why admit the peddler to still further congest our cities and add to our social overhead, and exclude the peasant who would join our producers? And why, above all, do we cut out desirables by assigning part of our admissable quota to lands which contain too large a percentage of undesirables?

If public policy will prevent Congress from meeting the needs for industrial labor by removing the restrictions on immigration, then three steps should be taken:

1. Congress should be asked to modify tests so that none except those that come here to work will be admitted. Let our immigration authorities advertise for labor in countries that have furnished us with readily assimilable material for citizenship in the past, examine them for the necessary tests before they embark, and then dispose of them quickly when they arrive at Ellis Island.

2. Improve industrial methods and enlarge the application of labor aiding machinery, so as to release labor for transfer to industries in which labor-saving machinery cannot be readily applied.

3. Find some method of improving conditions in industries that are known to be over manned, so that the surplus labor may be diverted to industries that will offer better opportunity for employment.

The first of these three steps could, I believe, be solved promptly if Congress could be convinced of the real needs of industry, and could be presented with a plan that would meet that need within the restrictions as to the number of immigrants annually admissible.

The second step depends largely on the ingenuity of the engineering profession in improving processes.

Regarding his third suggestion, Mr. Piez took the most obvious example, that of the coal industry, and showed how over-development is not only using too many men, but too many cars as well.

Local Materials

ONE of the important topics taken up at the recent convention of the American Road Builders' Association was that of the use of local materials. Mr. Vernon M. Pierce of the U. S. Bureau of Public Roads was one of the speakers on this topic, with a paper on the following day by Mr. H. J. Kuelling of the Wisconsin Highway Commission.

Mr. Pierce spoke particularly on the use of deposits of various inferior materials, such as are not usually sold commercially for road building purposes, and advocating their use in localities where regular commercial materials are not available. He did not try to argue that these would make a road equal to the recognized standard materials, but that through their use some localities could have roads where otherwise the cost would be prohibitive. He gave also several suggestions as to how these local materials might be used, especially recommending some of them for bituminous macadam roadways.

The paper was not one to which any one, even a commercial stone or gravel producer, might take serious exception, inasmuch as these were recommended simply as local expedients, and temporary expedients at that, giving way perhaps to permanent surfaces of better types as the localities become able to pay for them.

Mr. Kuelling chose as his topic "How to Equip and Operate Local Gravel Pits to Produce Concrete Aggregate." Mr. Kuelling has grown to be an enthusiastic champion of this method of securing road building material, and states in this paper that nearly 24 per cent of the aggregates used on the 355 miles of Wisconsin highways, put in last year were taken from local deposits.

Mr. Kuelling has in the pages of PIT AND QUARRY about a year ago presented some of his ideas on this subject, and somewhat earlier than that we ourselves presented in these pages the result of our investigation in Wisconsin, showing a number of cases in which the use of local material had not been satisfactory either from the standpoint of quality of materials, sufficient and regular delivery, or low cost.

He admits in the present paper that commercial pits and quarries can produce cheaper than a temporary local plant, and advises using them where the question of freight does not enter and the difference in truck hauls is not too great. Mr. Kuelling has made undoubtedly a very strong statement of his case in this paper, but it is, of course, all on one side of the question, and does not take into account the greater expense of investigation and oversight on the part of the Highway Commission, or the reluctance with which contractors will enter into contracts to use local materials where the deposit is not already opened up and well known, or where they themselves are expected to become material producers as well as contractors and open up the deposits themselves.

Of course, we cannot overlook the fact that Mr. Kuelling is interested in seeing roads built, and is perfectly justified in keeping this end in view rather than making the highway system of the state subservient to the commercial material producers. It is to be regretted, however, that the Highway Commission has seen fit to go into this matter so extensively. We feel that the commercial producers themselves would have been more responsive to the needs of the commission and would have themselves opened up new deposits had sufficient encouragement been given them. We feel, too, that the natural tendency will always be to scrutinize the product of a local quarry or pit less carefully and to require less of it than would be required of a commercial producer.

The inferiority of roadways which will thus result must also be taken into account as one of the expenses to be charged against any saving in freight rates or other savings which Mr. Kuelling may be able to figure out. We feel that the roadway itself is the thing to be looked after first, and that the inspectors employed by the commission should be instructed to require the same standards in materials at all times irrespective of their source. We believe such a requirement as this would of itself condemn some of the deposits which have been opened up, and would put the whole situation in quite a different light.

So many agencies have been working together within the last few years to obtain a high quality of concrete pavement, this quality depending so largely on the quality of the materials which enter into it, that it seems a pity to have anything occur now to lower these standards.

It's a Big Industry

IT WAS an intensive "road building" week—that third week of January, when the Road Show was on, and various conventions, more or less related, met in Chicago. One could not imagine a better clearing house for information, and the preparation for an active and intelligent construction season.

Engineers, contractors, machinery manufacturers, material men, all have their innings at these times; and the fact that they can all get together to help in the common good is one of the biggest features of the whole program.

This year's Show was the biggest, the most informative, the best attended, the most remunerative to the exhibitors from a sales standpoint. It demonstrated a number of things, not the least of which is the wisdom shown in putting it on a sound business basis.

Not every exhibitor got all the space applied for—which is far better than having a number of empty booths, even though some have to be somewhat disappointed.

But what a revelation it was of the progress of the road-building industry! From the production of the materials to the smoothing of a completed concrete road—every process was represented, with machines to accomplish each operation. It's a big industry!

A Record

PRELIMINARY figures just issued place the production of Portland cement for 1922 at 113,870,000 barrels. This is far and away the largest production in the history of the industry, and if the final figures bear out this first approximation it is above our optimistic November prediction of 110,000,000 barrels. At any rate it is a record to be proud of. Many deductions can be made from it—for instance, that we are finding our stride and are keeping more closely abreast with our increasing highway program. And we have not yet put our cement plants to the limit of their capacity. Cooperation of all parties concerned will help us to set a new record this year.

"Sign Here!"

THE various national associations are for the most part committed to definite membership drives. These are born of a confidence in the worth of the work they are doing, and knowledge that only by 100 per cent cooperation can 100 per cent results be attained. Join! Do your bit! Get your share of the benefit! For we are here to tell you that this benefit is not hypothetical. It is not coming at some indefinite time in the future. It starts as quickly and serves you as definitely as an insurance policy. Get busy! Get in!

Washington Convention

Sand and Gravel Men in Three Days Session—Dann Reelected

The seventh annual convention of the National Sand and Gravel Association, held at the Raleigh Hotel, Washington, D. C., on January 24, 25 and 26, will be remembered by the large number of representive sand and gravel producers who attended as the best gathering of the national body that has yet been brought together. As such it was prophetic of the growth and greater usefulness of the organization under whose auspices it was held and presages other and greater conventions of a well organized and smoothly functioning association.

The sessions were opened on Wednesday morning by President Alex Dann, who, with no preliminary flourish, placed before the membership the reports of the past year and spoke of the activities that will fill out next year's programs. Before taking up the topics that formed part of his own report, Mr. Dann distributed the printed reports of the executive secretary and the treasurer. Mr. John Prince, treasurer, was unable to be present and Mr. Dann made on his report the comments that would have been made by Mr. Prince himself, though he drew attention to Mr. Prince's efficient management in a way that that modest gentleman himself would not have done.

Better Financial Condition

The outstanding features of the paper were that it showed a healthier financial condition because of reduction in expense, this in spite of a decreased income as a result of the discontinuance of a number of memberships earlier in the year. Many of these who dropped out, Mr. Dann said, later rejoined. There is a much better spirit about the payment of dues. Mr. Dann stated that this very satisfactory report confirmed his belief that the membership of the National Sand and Gravel Association would increase 50 per cent during the coming year.

Mr. Dann here called attention to a change in the program. The members attending were to have been presented to President Harding on Wednesday morning, but the President's illness prevented this and it was necessary to defer the visit to a later date, contingent upon Mr. Harding's recovery. This brought about a change in the order of speakers and C. C. Griggs, chief of the Nonmetals Valuation Section of the Department of the Interior, who was slated to appear Thursday afternoon, was called upon.

Mr. Griggs prefaced the reading of an interesting paper by the statement that it was occasionally the work of his division to give information of a general nature on the methods of figuring the worth of a natural deposit for purposes of development; that in these cases he did not know the names of the companies or the locations of the deposits, the problems being usually proposed as hypothetical cases by interested parties; that reference in his paper were to such deposits, about whose location or ownership he knew nothing.

The paper referred first to the misunderstanding that frequently exists about the activities of the government departments interested in checking up tax returns and to the attitude of sections of the press on government tax collection methods. The idea would get abroad quite easily, particularly with encouragement by the press, that Uncle Sam had an army of hawk-eyed sleuths ever ready to cause unnecessary annoyance to taxpayers. This is not the case. The government has to exercise care, of course, but no more than one would expect from a large business concern which is keeping a complicated system in working order.

Valuation of Deposits

Allusions to a number of cases in which Mr. Griggs was furnished data, but no information on ownership or location, showed the important work the Nonmetals Valuation Section is doing. In one case a broker intending to handle a bond issue on a company that put a value of 10 cents per ton on limestone in the ground was convinced that the limestone bearing land had no value except as raw land. In other cases, producers were shown how to calculate the value of their deposits and how to figure off depletion on them. The slight value of leaseholds

in establishing valuation figures was touched upon, as was the great value of an appraisal, properly made and constituting more than a mere opinion. Values of deposits cannot properly be calculated on information as to royalties, for values are actual and royalties are matters of agreement. The "discounted earnings method" was explained and it was shown why it did not apply in calculating values and depletions of nonmetallic mineral deposits. It works out satisfactorily in the cases of mines producing valuable minerals from small deposits. It involves the employment in calculations of a "risk rate" which, in the case of sand and gravel deposits, results in the showing of no value at all in the deposits. Sand and gravel deposit values can be computed without resorting to such theoretical methods.

Depletion figures allowed on the average nonmetallic mineral deposit run about 2 per cent of the selling price. Limestone is allowed 1 cent per ton, sand and gravel 1 to 1½ cents per ton, glass sand about 6 cents per ton, molding sand from 6 to 10 cents per ton.

Mr. Griggs thinks it should be possible at some later date to compile from the data collected by his division a tax rate figure that can be applied to the figure representing the gross profit of any particular industry, the result being the tax due with depletion, depreciation and all other items figured in. He hopes some day to see such a plan put into effect.

Coming Activities

After the reading of this paper, Mr. Dann continued his report, with particular reference to the activities of the association for the coming year. He said the association should have a fund of $10,000 to enable it to branch out into new activities. During the past year the paramount activity was transportation. All producers were considerably hampered by difficulties along these lines, but were saved from worse troubles by the fine work of Mr. Barrows during the year. The Washington office was also of great assistance to producers in straightening out tax matters. In this they were greatly helped by government authorities. The wayside pits caused a lot of trouble. Mr. Dann showed that, while it is not axiomatic that all wayside pits material is below grade, most of it is apt to be. It is necessary to advocate the use of good material, not loudly but consistently.

There were some differences of opinion as to association activities last year. Various members thought the organization should not do work along one or another of the following lines: giving tax advice, helping in transportation difficulties, fighting wayside pits, or advocating the preparation of better material. Mr. Dann asked the membership to let the officers know what the association should do. He thought it was quite necessary to keep the Washington office busy on these matters. The ever increasing centralization of governmental activities requires adequate representation in the place where the government affairs are conducted. The association, if authorized to do so, could engage in many beneficial activities. It could employ a high class promotional man and a skilled engineer, these men to travel from plant to plant and help to advocate the promotion of sand and gravel and help the producer with his mechanical and engineering problems. The association could found investigational and information bureaus to cooperate with other associations and find new and broader uses for sand and gravel. It could go into the work of developing standard cost accounting methods and helping producers to apply them. The association has given valuable assistance along these lines but has never had an opportunity to devise standard methods.

Wayside Pits

After this began open discussion on the methods to be used in combating the use of wayside pit material. It was given a definite direction by the accounts given by Mr. Shieley of St. Paul and Mr. Fletcher of Des Moines of the ways in which the wayside pits were hurting their businesses and of the way in which they were fighting back. Mr. Shieley passed out samples of blotters carrying arguments against the use of inferior sand and gravel and for the use of clean materials. At his plant he has to turn out sand and gravel that must come up to regid specifications, yet very doubtful wayside materials go through. Mr. Fletcher is held to 1/10 of 1 per cent of impurities, although wayside materials containing 5½ per cent of clay are also used. Mr. Sutton of Indianapolis said that associations in neighboring states should work together and that the national body should work with the Bureau of Public Roads and the American Society for Testing Mate-

rials. Mr. Smith of Memphis said that the attack should be along educational lines. Photos of bad spots of road made with wayside materials should be taken and held up as horrible examples. Well prepared literature should be distributed freely. Mr. Donnelly referred to the political discrimination which frequently hampers sand and gravel producers. Mr. Shieley told of how, when a good deposit is opened up along a road and material taken from it proves satisfactory, the pit gets a reputation. Material taken out later and used for other purposes on the reputation of its earlier use brings gravel into disrepute.

In the afternoon the membership took up the open discussion of the association's program with respect to reintroduction of Senate Bill 690 and also with respect to steps that should be taken to improve the industry's car supply. A number of illuminating expressions came from various producers. Mr. Sutton, Mr. Dann, Mr. Chandler and Mr. Donnelly spoke on the related topics and undoubtedly helped to clarify the situation for some of the men present. Mr. Sutton suggested that a bill similar to Senate Bill 690 be arranged for introduction in the House of Representatives.

Hoover Looks Ahead

At this point Mr. Herbert Hoover was introduced and for some half hour thereafter the members had the privilege of hearing a really big man tell simply but expressively of some of the things that are in store for business in the immediate future. He said that, if the United States were separated from the rest of the world, it could be said to be in a very prosperous time. There is comparatively no unemployment and productivity is high. We are recovering rapidly from the effects of the war and the commercial depression which followed it, more rapidly than Mr. Hoover at one time thought we could. Europe, too, is beginning to show the greatest signs of progress in years. Unemployment there is decreasing and all the signs of an early economic recovery are visible. The fiscal situation in some parts of Europe is the one feature of retrogression. American industry is not dependent upon Europe; American agriculture, on the other hand, has important markets there. Mr. Hoover says it is impossible to make any forecast on the European disturbances, but does not believe they will be serious.

He dwelt on the subject of trade associations long enough to tell of the efforts of the Department of Commerce to build up a spirit of co-operation between the department and the various trade bodies. He is seeking to extend the usefulness of the service, statistical and otherwise, that the department is carrying on, so as to enable business men to form more accurate judgment. He then extended an invitation to all the members to visit the Department of Commerce and thus get a better idea of the work it is carrying on.

He Answers Many Queries

After this Mr. Hoover offered to answer questions on matters falling under his jurisdiction. His offer was accepted by quite a number of men and the following questions and answers came up. (It must be remembered that PIT AND QUARRY gives here the sense of each question and answer, not its exact wording.)

"What are your views, Mr. Hoover, on the transportation situation? It is very important to us and we were discussing it just before you came in."

"Transportation has been falling behind the rest of the industries of the country for 10 years. There is a continuous shortage of facilities. The roads have not kept pace with American industry. The car shortage is due more to shortage in motive power and terminal facilities than to any other causes. The country has apparently decided to regulate rates by law. The establishment of rates by state bodies is almost universal and the national government is also doing this to a great extent. We should be logical and follow out this practice of rate regulation by government agencies to its conclusion—we should obtain a consolidation of the roads and thus do away with rate competition. A considerable number of the railroads are earning less than 1 per cent on invested capital, and this 'weak railway' problem is a serious one in American railway practice. Again consolidation is the only solution. We should begin rapidly to bring about the consolidation. When rates were increased some 40 per cent during the war certain inequities between primary and secondary products became greater. A high priced suit of clothes, for example, could be shipped across the country at only a few cents for very short hauls, almost prohibitive. There should be lower rates on primary (basic raw) materials and higher rates on secondary materials.

The rate structure would be enormously simplified if consolidation could be brought about and many inequities would disappear."

"Would the pooling of cars help any?"

"The cars are already pooled, in a way. A regularly organized pooling arrangement would not help much."

"Would the strong roads take over the weak roads, and thus make consolidation possible?"

"The question of compulsion would be a big one, biggest in the East. The sentiment of the West is more for consolidation and it is advocated more there."

"How can available railroad facilities be distributed to get away from the recurring shortage of open-top cars during the coal shipping season?"

"There is, of course, a reasonable fluctuation in coal production and demand and the roads would have more work at some times than at others, under any arrangement. But, if the railways could be induced to move their own coal during the off season, this would account for a third of the coal to be handled and would thus leave more cars during the winter season. Also, the stocking of coal regularly during the whole year would help."

"Will the government continue to further the good roads movement?"

"I have heard nothing to the contrary and assume that the programs as laid out will be carried through."

"In the new building code being prepared by the Department of Commerce, will sand and gravel specifications be set down?"

"The idea of the building code is to help to simplify the small dwelling problem and is being prepared as a result of a great many requests for such a publication. Competent engineers, architects, and men in touch with material problems were consulted. If there is anything objectionable in the code, the department will be glad to hear of it."

"What could be done to get into use, for the hauling of sand and gravel, cars that frequently wait around for 5 days a week in railroad yards, before being sent to mines?"

"We should have no coal priorities on railroad cars. Priorities give too many opportunities to coal speculators. If we had adequate transportation facilities or an adequately organized transportation system there would be no coal problem."

"Why are sand, gravel, and crushed stone men forced to pay demurrage charges on cars held a few days, while coal operators are not?"

"I have no argument to offer, and I do not know if I can solve it by the consolidation theory. I am going to think it out along that line."

Mr. Hoover, in leaving, expressed the hope that he would have an opportunity through the Department of Commerce, to help producers, and asked that they call at the office.

Immigration Discussed

Mr. Otho M. Graves of the National Crushed Stone Association called at the meeting with other members of the immigration committee appointed at the annual convention of the National Crushed Stone Association in Chicago the week before. On invitation of the chairmen, Mr. Graves gave an account of the experiences of the immigration committee. He told of how they had come to Washington to try to get a hearing before the House and Senate Committees on Immigration and explain to them the difficulties under which a restricted immigration program puts crushed stone producers. This is the root of the whole difficulty about labor shortage. The stone men found the House Committee in session and the hearings closed. They were, however, given five minutes. Mr. Schmidt, president of the National Crushed Stone Association, took one hour and five minutes. The stone producers' judgment is that the House Committee contemplates even stricter immigration laws. They did not see the draft of the proposed bill, but came away with the idea that the House Committee seems to think that the country cannot assimilate even the allowed 3 per cent yearly. The Senate Committee showed more sympathy. It seemed fairly well divided, but with no set opinions. The stone men also called upon several senators and representatives. They now propose to get members to write personal letters, asking members of Congress to use their influence to secure a wise broadening of the immigration laws. Mr. Graves asked that the gravel men do the same, as individuals and as an association. Mr. B. D. Pierce, Jr., chairman of the stone men's immigration committee, also voiced this view.

Dann Reelected

Mr. Smith then gave to the meeting the nominating committee's recommendations. All nominees were elected unanimously. They are—President, Alex Dann; vice-president, E. G. Sutton; secretary-treasurer, John Prince; directors-at-large, Harry Donnelly, V. O. Johnston, J. E. Carroll.

On Thursday morning the first speaker was Mr. DeGroot of the Interstate Commerce Commission, appearing for Clyde E. Aitchison, who was on the program as the representative of the Commission, but was prevented by sickness from appearing. Mr. DeGroot began his talk by reference to the heavy business of 1922. Although interfered with by the coal and railroad strikes, this business was remarkably good. He briefly reviewed conditions during the year from a transportation point of view, touched upon car shortages caused by the deterioration of equipment while the shops were closed and by massing of cars in the non-union coal producing centers. In spite of these difficulties much more sand and gravel was hauled than in 1920 or 1921. Shipments compared with 1921 as 16 to 13, with 1920 as 16 to 11. A gain in sand and gravel shipments is that producers usually load up to the car capacity. Service orders 22, 23 and 24 appeared on July 25th. Of these orders, 22 is still in force, 24 was cancelled and 23 was done away with by 25.

Car Supply Prospects

Mr. DeGroot in speaking of 1923 prospects, referred to comparative 1923 figures. He showed how, on July 1st, 1922; there were 14.3 per cent of all cars in bad order, on August 1st, 15.3 per cent in bad order, on January 1st, 1923, 9.5 per cent in bad order. Engines, which, with only a little inattention, will rapidly run down, also showed a much smaller proportion on the bad order list in the latter part of 1922. The roads ordered or installed or had building operations begun on 145,000 new freight cars and 2,824 new engines in 1922. All this equipment will be installed in 1923 if it is not already done. If in 1922 the sand and gravel industry could ship its greatest tonnage, why is it not reasonable to suppose it will do much better in 1923, when there will be more new equipment and less of the old equipment in bad order.

There are indications of a permanent settling of the coal disputes, no troubles in the steel business are expected, informed people are not looking for any more railroad labor troubles. The indications are that, if all will pull together properly, shippers and carriers, a big year is in prospect.

Exclusive of coal the total loading of all commodities in 1922 exceeded 1920 loadings by 3.1 per cent. In 1920 ercluding coal, 35,036,022 cars were loaded, in 1921 this dropped to 31,347,816 cars, and in 1922 came up to 36,265,178 cars.

Answering a number of questions, Mr. DeGroot brought out information on a number of points. The Interstate Commerce Commission has just concluded its hearings on mine ratings, the distribution of cars between mines, and the use of unused cars.

Well informed men differ on the question of railway car pools. The matter of repairs to cars presents the greatest difficulty. Many differences of opinion exist as to the extent of use without regard to ownership. The holding of equipment during periods of heavy car service is a point that offers much room for disagreement.

Cars and engines are being ordered rapidly. Builders are not booked up to capacity but expect a very prosperous year.

Geologist Talks

Following Mr. DeGroot was Dr. George E. Ladd, economic geologist of the Bureau of Public Roads, who treated the membership to some reminiscences of an experienced geologist on the subject of sands and gravels. Doctor Ladd's interest in sand and gravel has always been that of the geologist, not of the producer, but he knows many producing problems and has always been more or less closely connected with producers. He told of his early work in this field in New England, the South and the Middle West and ventured the statement that he had probably been interested in sand and gravel more than any man there present.

A few years ago Doctor Ladd began the conduct of a survey of sand and gravel plants and deposits of the United States for the Bureau of Public Roads. For some reason or other this work was discontinued and Doctor Ladd ordered to take up studies of certain road building problems for the Bureau.

Doctor Ladd also conducted surveys of crushed stone plants with particular reference to general economic features. Much useful information was secured and the investigators became able, after a time, to tell after brief inspection, just where the end of a particular operation would stand. In one case, he was able to recommend changes in operating plans which reduced the operating expense by one-half. There were in vogue about numerous stone plants a good many inefficient methods. Doctor Ladd has little doubt, as many operators have little doubt, that a very high proportion of sand and gravel plants are operating under very inefficient methods, and would, if relieved of these methods, make considerable more profit.

Following Doctor Ladd's talk two motion pictures of the United States Bureau of Roads were shown. The first of these took up the story of the early survey work, and the activities that are carried on up to the time the actual concrete or gravel surface is constructed. The second film showed the building of a modern concrete highway from the time materials are sent to the job to the time the finished road is ready to bear traffic. All the operations were faithfully depicted and in some detail. The pictures were well received by the membership.

Shiely in Motion Pictures

After the government pictures came a 1200 foot film showing the gravel and crushed stone plants of the J. L. Shiely Company of St. Paul, Minn. To Mr. Shiely, who talked on the film as it was being run, we make haste to accord the distinction of being the most efficient advertiser of mineral aggregates that we have ever met or heard of. Earlier in the convention he gave some indication of his activity along promotional lines, but his film is the last word in the advertising of sand, gravel and crushed stone. It shows, in general, the operation of the two plants; but it accomplishes more than the mere description of operations, it shows the importance of employing such an operation to secure materials fit for use in concrete. The film is consequently an effective weapon against the ever-encroaching wayside pit. The effect on the men in the hall at the time was noticeable. They all saw the value of the idea and deluged Mr. Shiely with questions on costs, methods of securing such pictures, and other features of the work of producing such a film. We will bet even money that other producers will adopt the idea.

Mr. Pilcher, appearing after Mr. Shiely's film had been run, talked of types of road, principally bituminous, other than the ones built of concrete, crushed stone or gravel. Mr. Pilcher's address was short, but very much to the point.

During the noon hour the gravel producers met at a complimentary luncheon given by the Association to members and their wives. Music of a very superior order was furnished by the hotel orchestra and this, together with the very fine meal, made the occasion a most enjoyable one. Business was forgotten for the time being and all devoted themselves to the occupation of having a good time.

The first speaker on Thursday afternoon was the Hon. John G. Cooper of Ohio, a member of the Committee on Interstate and Foreign Commerce of the House of Representatives. Mr. Cooper opened his talk, which was largely on transportation, by referring to the too-prevalent practice of going to Congress with everything that needs attention, of making worse the condition that exists today in which it is attempted to cure everything by legislative action. What we need, the honorable gentleman said, was to bring about a change for the better by discharging more fully our individual duties and responsibilities.

Opposes Labor Board

Mr. Cooper is opposed to the continuation of the Railway Labor Board.

"The 'one big union,' whether it be among employers or employees, is dangerous to our Government and the public interest, and that is the chief reason why I oppose such tribunals as the Railway Labor Board," he said. It encourages the spread of mass action among the workers on the one hand and the formation of gigantic combinations of capitalistic interests on the other hand. It prevents friendly cooperation and the practice of the square deal between the managers and men, and it feeds more and more fuel to the devastating flames of class hatred and prejudice which are such a grave danger to the American life of today. It destroys the teachings that all men should be given equal opportunities to advance to higher places

according to their integrity, ability, and industry.

"I am of the firm opinion that controversies and grievances arising between railway managers and their employees can best be handled and settled between the officers and employees of each particular railroad company or system. It will be a bright and happy day for our country when we get back to a condition of affairs so that the officials in charge of a railroad can run that railroad and the workingmen on that road are permitted to settle their own grievances without being subjected to the interference and dictation of a Government tribunal and 'one big union' officials, no matter whether such officials claim to represent the interest of employer or employee.

"I say that it is impossible for the Railroad Labor Board to determine what shall be the wages and the working conditions on all the railroads in our country without doing an injustice either to one side or the other, and frequently to both. Railroads are operated as a private institution, and they should remain as far as possible a private enterprise, under the proper Government regulation, for the protection of the public.

"The very existence of the Labor Board has been a standing invitation to the railway operators and employees to submit every kind of minor grievance to the board for its consideration."

Mr. Cooper has introduced a bill in Congress to abolish the Railroad Labor Board and re-establish the Board of Mediation, Conciliation and Arbitration formerly provided for in the Newland's Act.

Judge Williams Agrees

Immediately following Mr. Cooper was Judge Nathan B. Williams, associate general counsel of the National Association of Manufacturers. On a number of points Judge Williams is in substantial agreement with the speaker who preceded him. He, too, spoke of the dangers of trying to do too much by recourse to law, by trying too hard to legislate improvement instead of bringing it about by discharging our individual civic duties more effectively. There is altogether too much restriction by government, too much alleged reform; schemes that have been tried and found wanting, sometimes thousands of years ago, are being seriously advanced today. More and more work is being thrust upon the government and, as a consequence, government is becoming too centralized, too powerful, too disposed to encroach upon private rights. The encroachments of the national government upon the rights of the several states is encouraged too much, tolerated too much.

There is much sham to legislation, as portrayed to us through the press. We have "an anarchy of laws;" that is, many enactments that contradict or nullify one another, get on the books and have the effect of robbing law of its force. Even lawyers can no longer wade with any degree of confidence through the labryinths of new enactments. During the time that the present Congress has been in session some 13,000 bills have been introduced into the House and some 3,000 in the Senate. The favorite sport of the average member of Congress is introducing bills. Often bills that have been proposed with great acclaim are found to be almost verbal repetitions of other bills that have been laws for years. Congress is not entirely to blame. The people want an active congressman, and the congressmen hold their jobs by displaying much activity.

There should be more intelligent action by the citizens individually and as associations. When legislation must be had, let it, if possible, be through the states. Strengthen local authority a little more and there will be more efficiency. Over centralization of government means gross inefficiency.

More Power for States

The states should handle many matters now controlled by Washington. They should, for example, have greater power in fixing rates. The Interstate Commerce Commission has done much good work but is swamped and is continually getting in deeper. When a matter not of prime importance goes to the Commission, it must necessarily be assigned to a subordinate, possibly a sub-subordinate, whose work is reviewed by the subordinate. The reviewing process is carried on through a number of stages of increasing importance and finally the document reaches a man in authority for signature. He does just that, affixes his signature.

Local law making bodies should be given greater power, says Judge Wil-

liams. Only by bringing this authority closer home can we make it more effective and more responsive to public need.

After Judge Williams had concluded his address, President Dann invited open discussion along any lines that the members chose to follow. The invitation was accepted by a number of producers and there were some interesting talks on a variety of subjects.

Mr. Greenfield of Atlanta suggested that the Association consider the advisability of holding the annual convention in Washington each year, stating that this would make it easier to secure good speakers and to get in closer touch with the government departments that had quite a lot to do with the industry. Immediately proponents of other plans appeared. One gentleman found a goodly following when he stated that conventions should be held in such cities as appeared likely to attract the largest attendances. Mr. McDermott of Knoxville advanced an idea that was a varient of the last proposed. He added the thought that the convention city be a different one each year, so as to get the different groups of producers interested each year.

New Uses for Gravel

The discussion of new uses to which sand and gravel may be put came up next. A Pittsburgh producer told how he discovered that druggists in his city were selling packages of clean washed sand as grit for canaries at the rate of 10 cents a pound, or, expressed in terms to which we are more accustomed, $200 per ton. He immediately made arrangements with a number of druggists to take "bird grit" furnished by him at a considerably lower figure that still shows him a big profit. The demand, of course, is not large.

Mr. Smith of Memphis drew attention to the apparent dependence of the Interstate Commerce Commission and other rate bodies on statistical information taken from the American Railway Association and other intersted groups. Their figures have often been found wrong. For example, Mr. Smith's plant was set down as receiving 100 per cent car service over a period in which not a single car was delivered to his plant. The method of arriving at this service figure is interesting to say the least. Mr. Smith had been told that it would be useless for him to order cars over a certain specified length of time. He accordingly closed down a number of plants during this time. And yet, because he got all the cars he asked for, none at all, he was listed as receiving 100 per cent car service.

Mr. Shiely of St. Paul stated that he believed the bringing of the Association's office to Washington was one of the best moves that had been made. Much useful work was done through this office and Mr. Barrows was to be highly complimented on the efficient way in which he handled the car supply and rate matters recently undertaken. Mr. Shiely is another believer in the holding of annual conventions in various places.

Mr. Carroll of Buffalo started a talk along the lines of reducing gravel into sand. Mr. Dann told of his experiences in this work. He has been experimenting for some time and has tried out a number of different methods—disc crushers, high speed gyratories, dry pans and rolls. In his judgment the dry pans showed up best, with the rolls second. He stated that the T. L. Herbert Company of Nashville is doing some good work in this direction.

Ready-Mixed Mortar

Then came a rather extended talk on the sale of a ready mixed lime mortar, produced at the plant and taken, almost ready for use, to the job. Such a plan would, it was said, prove popular with contractors on small jobs, since it would relieve them of a lot of work and insure a well prepared material. In this discussion a large number of producers participated. The plants of the Blue Diamond Materials Company at Los Angeles, Atlanta and Boston were referred to considerably and their success in the operation of such a plan commented upon at length. The effect of weather conditions on the success of the mixed mortar plan in certain sections, and limitations of the lime mortars in making plasters, as distinguished from gypsum plasters, were given consideration.

A reference to the sale of materials on a measurement basis made it very clear that the sense of the meeting was for sale on the basis of weight. A short amount of time was devoted to talk on advertising. A constructive suggestion which this brought was that all the printed matter of producers should carry a statement somewhat on the order of "we are members of the

National Sand and Gravel Association, which advocates the use of screened and washed materials."

The only speaker on Friday morning was E. W. James, assistant to Thomas H. MacDonald, chief of the Bureau of Public Roads. It had been Mr. MacDonald's intention to address the meeting, but sickness prevented his appearance. Mr. James gave some interesting statistical information of the Federal Aid road construction program. He told of how money paid for gravel has absorbed 25 per cent of the total appropriation to date and accounts for 40.4 per cent of the mileage. Water bound macadam was used for 2.6 per cent of the mileage, bituminous macadam for 3.5 per cent and bituminous concrete for 3.5 per cent Total grading costs came to 23 per cent of the total amount spent, surfacing costs to 58 per cent, structural costs 15 per cent and miscellaneous costs to 4 per cent.

One of the most difficult works of the Bureau has been to establish specifications and to stick to them in actual practice. In 1916 only two states had specifications at all similar, all the others were rare birds. There were important differences as to sizes, standards, and methods of testing. Specifications were carelessly prepared and in many cases were merely the result of clipping parts of specifications at various other points. The results of this last practice were, in some cases, grotesque. The Bureau set about to correct this, established standard specification forms, and got 41 out of 48 states to adopt these forms.

Much About Road Building

A bit of information that the gravel men were glad to hear was that the Bureau will no longer accept non-rigid bases less than 8 inches in thickness. Heretofore some such bases have not run over 4 inches in thickness.

After giving some more interesting statistical information on the magnitude of the road building program, Mr. James talked on the financing of the program and the matter of absorption by the public of bond issues. The government will have to study the matter of financing he said. It constitutes a big problem.

Upon the conclusion of his speech Mr. James answered such questions as were put to him. He explained that testing methods for stone and gravel were different because crushed stone, being angular, shows a poorer wearing quality than it actually has as compared with gravel, which is smooth and not so much inclined to break and crack at the corners. No really reliable method of testing gravels has as yet been developed. One difficulty is that gravel contains all kinds of stone in a given mass, while crushed stone is a homogeneous material, the same throughout. In answer to another question Mr. James said that, in general, wear test results are in the same ratio as compression test results.

It was asked of Mr. James to define the powers of the Bureau of Roads in insisting that a known better material, or a material coming up to specification and procurable at lower prices than others, be used on a given job. He stated that by law the Bureau has only the right to veto the use of a material proposed by a highway department with which it is cooperating. The Bureau always insists, other things being equal, on the lowest bid, if all materials proposed in the various bids are acceptable.

After the producers had asked and had been given answers to a number of questions of less general interest, Mr. James gave the floor to W. L. Smith of Memphis, Chairman of the Committee on Nomination.

Mr. Smith named as the four members of the Board of Directors who, with the officers, would form the Executive Committee:

Hugh Haddow, Jr., Menantico, S. & G. Co., Millville, N. J.

G. C. Ross, Ohio River Gravel Co., Parkersburg, W. Va.

W. L. Smith, Memphis Stone & Gravel Co., Memphis, Tenn.

R. C. Fletcher, Flint Crushed Gravel Co., Des Moines, Iowa.

Mr. Haddow, Chairman of the Budget Committee, announced a 1923 budget of $24,000. Of this $15,000 is for the conduct of the Washington office, $1,000 for publicity, $2,000 for promotional activity, $2,000 for traveling, $1,000 for transportation, $3,000 for executive traveling expense.

At the conclusion of this report, Mr. Dann, upon the acceptance of a motion, declared the convention adjourned.

The Genesee Sand and Gravel Co., Buffalo, N. Y., has increased its capital from $100,000 to $150,000

Gravity Helps at This Plant

At Red Mill, Pa., is located the silica sand washing and crushing plant of the Ebensburg Sand and Stone Company. This plant is working a material which, while not of sufficiently high silicious content to make a good glass sand, is adaptable to many of the other purposes to which silica sand is put.

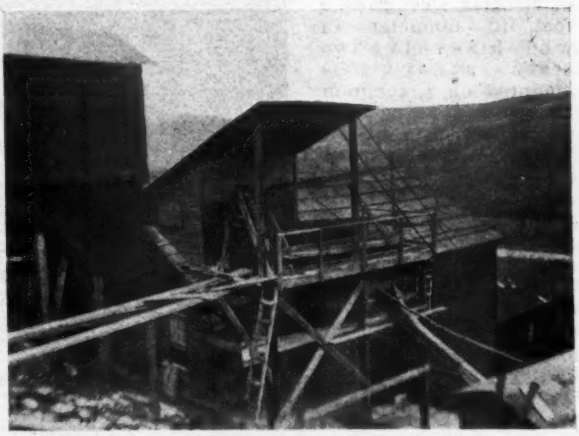
As shown in one of the accompanying illustrations, the stone from which the sand is secured is mostly quite thinly stratified. It is economically blasted, being shattered in the process to a fine degree of fragmentation, which makes the hand loading that is in vogue a comparatively easy matter. Lengths of track from the working faces to the tipple are very short and have a slight incline away from the faces to the tipple.

When the loaded cars of stone come to the end of the quarry track, as shown in the sketch and in one of the photographs, they are dropped forward on a rocking tipple. This tipple is arranged to dump under the weight of the loaded cars, its operation is controlled by a lever. The stone falls from this point through a chute into a rock bin, the highest point in the plant.

The sketch furnished with this article shows how gravity is utilized to do as much as possible of the conveying of material from the rock bin to the railroad cars. The plant is in this as in other respects, ideally arranged and very economical to operate.

There are at the plant three units each of the kind shown in the accompanying sketch. One of the economies of the operating method is in the fact that it requires only 4 or 5 men to handle it successfully. One man is kept busy with each of the crushing and washing units, and one man at the loading belt which pours the drawn sand into cars, this one belt serving the three units of machinery.

The stone as it drops by gravity from the rock bin is fed into a 20x12 inch standard Blake type crusher, built by the Lewiston Foundry & Ma-



Aggregate screening plant operated by company.

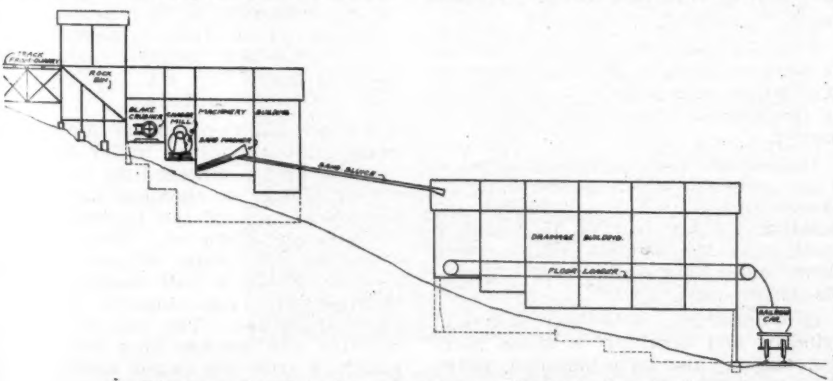


Diagram showing flow of materials through the plant.

chine Company of Lewiston, Pa., who also furnish the grinding, washing and conveying machinery and designed the complete plant.

The product of the jaw crushers drops, again by gravity, to 9 foot dry pans or chaser mills, one dry pan for each jaw crusher. These dry pans consist essentially of circular steel pans 9 feet in diameter in which revolve two heavy steel rolls mounted on a common horizontal axle. The pan itself is stationary. Water is fed into it and the material, as it is crushed by the action of the rolls, passes out through screens at the sides of the pan. The 9 foot pan will handle from 100 to 250 tons of material in 10 hours depending upon the hardness of the sandstone. The central shaft revolves at about 30 to 33 revolutions per minute. A revolving screen arranged to make a fine separation takes up the work after the dry pans, passing back to the dry pans any rejected material.

Part of the face, showing stratification of rock.

The material passed by the screens goes onto three batteries of Lewistown washers or sand washing screws, which operate by forcing the sand upward against a downward current of water. By the time the screws have worked the sand up to the tops of the troughs in which they run, the material has been thoroughly cleaned and drops from the end of the trough in fit condition for sale as far as washing is concerned.

From the sand washers the material is run down sluices into a drying building, where the moisture accumulated in the process is to a large degree removed.

Underneath the drainage building is a belt conveyor which, as shown in the sketch, runs from the back of the building as far out as the loading track, and fills cars by running into them a continuous stream of the plant's product.

In connection with the washing, grinding and crushing of silica rock, the company also have installed, under the supervision of the superintendent, Mr. Long, a screening arrangement for sizing crushed limestone. The limestone is easily secured at the quarry where the silica rock is loaded. It is crushed at the crushing level and elevated to the screen on the outside of the building shown in one of the photographs. From there the selected sizes drop down to bins which are served by a shipping belt, also shown in one of the pictures.

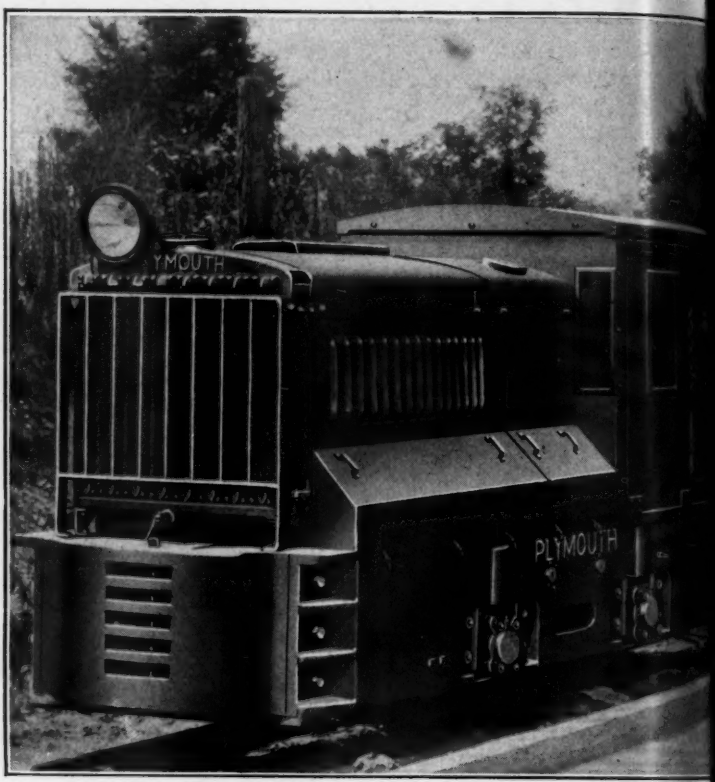
A new cement plant to cost $1,500,000, with a capacity of 2,000 barrels a day it is reported, will be erected in the spring by the Linwood Stone & Cement Co., of Davenport, Iowa. The capitalization of this corporation has been raised from $300,000 to $2,000,000 for ths purpose. This concern has been in business for several years, producing crushed rock, agricultural limestone, etc. A. E. Horst is president of the company, A. E. Carroll, vice-president; Otto Hill, treasurer, and J. F. Schroeder, secretary and general manager.

The Brewer Company of Worcester, Mass., has operations under way for opening up the largest lime plant producing high-grade chemical lime in the eastern section of the United States, at Winooski, Vermont. The company owns about 50 acres of land in this locality, which is both underlaid and overlaid with vast deposits of high-grade limestone. The erection of an elevator and storage bins with a capacity of from six to ten carloads, is planned in the near future.

Shipping Belt for Delivering Concrete Aggregate

Red Mill Plant of Ebensburgh Glass Sand Co., from Pennsylvania R.R. Tracks

Weight of Loaded Car Causes Rocking Tipple to Operate



One of the Three PLYMOUTH 7-Ton Gear Drive Lo... by Car...

The Power That Earns Money

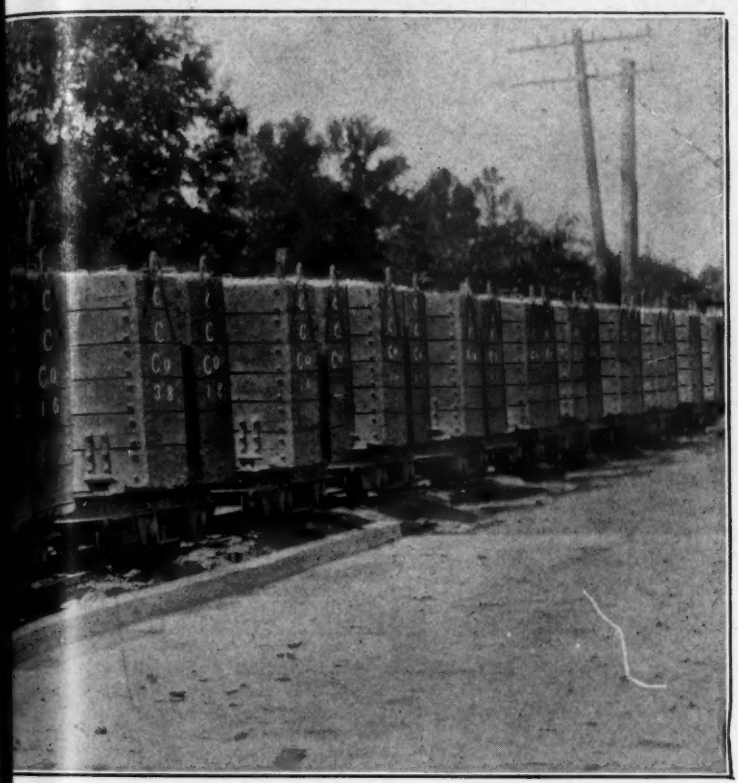
Read Mr. Gladheart's letter in the adjoining column. Wouldn't you say that's the power that earns money?

Then write us for bulletin that fully illustrates and describes this super-powered locomotive.

THE FATE-ROOT-HEATH CO., Plymouth, Ohio

PLYM...

Gasoline ...



d by Carpenter Construction Co., Terre Haute, Ind.

Mr. Gladheart's Letter

Putnamville, Indiana, December 4, 1922.

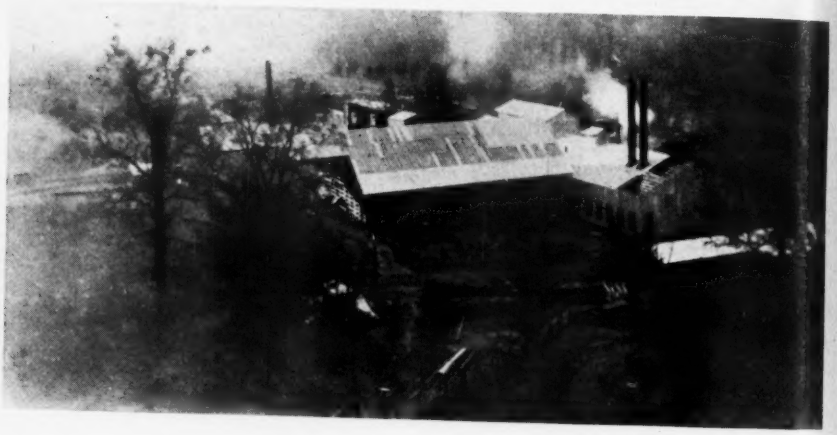
Plymouth, Ohio.
The Fate-Root-Heath Company,

Gentlemen: Our third seven-ton Plymouth Gear Drive Locomotive has been received and all are giving the best of satisfaction.

We find that we can pull from three to six more cars with them than any other six or seven ton locomotive. We have, as you know, eleven locomotives working. Your machines also have the best brakes and sanders that we have found.

Very truly yours,
HARRY B. GLADHEART, General Foreman.
Carpenter Construction Company.

MOUTH
Locomotives



Plant of Krippendorf-Tuttle White Cliffs Products Co.

Produces Whiting and Fertilizer

Notable in the development of the quarrying and reduction industry in the Southwest is the extensive plant of the Krippendorf-Tuttle White Cliffs Products Company, located in Little River county, Arkansas, in the extreme southwest corner of that state, and bounded on the south by Little River, one of the most beautiful streams west of the Mississippi.

The village of White Cliffs is so named on account of the enormous bluffs of chalk, a material which became known to the early settlers of Arkansas on account of its beauty and the ease with which the soft, snow white stone could be worked up into mantels, interior finish and other products. For many miles around the pioneers visited the scene of these deposits, early in the nineteenth century, to obtain their requirements of chimney and ornamental stone.

There are 2,600 acres in the tract owned by the Krippendorf-Tuttle Company, and 900 acres of this is said to be the extent of the cliffs proper. For a distance of nearly two miles up Little River the cliffs rise, at places, to the height of 135 feet, being sheer ascents, glistening white in the afternoon sun. The enormous volume of these deposits is such as to thrill the observer with the possibilities of this huge amount of valuable raw material.

Earlier development of these quarries and the establishment of reduction works was not thought of prior to a score of years ago on account of the remoteness of the property from shipping. The river was not a navigable stream and railroad facilities were distant and meager. True, there was an effort more than twenty years ago to manufacture cement according to the European methods, but it was unprofitable and generally unsatisfactory.

The crudity of this process compared with the modern American system rendered reduction unsatisfactory to the investors. There also was limited railroad shipping. Today there is a vast change. The Graysonia, Nashville and Ashdown is a short-line railroad serving White Cliffs and connecting with the Kansas City Southern at Ashdown, also with the Frisco-Rock Island lines, while to the north connection is made with the Missouri Pacific. Connections also may be made at Texarkana with the Cotton Belt and Texas and Pacific railroads. From this centrality and the numerous radiating trunk lines a vast volume of business can be handled from White Cliffs.

Geologists declare the White Cliffs deposits to be of a superior quality, being 93 per cent lime. The chalk, when reduced, is therefore clear of grit or crystal. When run through the powerful grinders furnished by the Grunedler Pater Crusher & Pulverizer Company, St. Louis, the whiting is found to be from 95 to 100 per cent 200-mesh fineness. The weight of this finished product is but 55 pounds per cubic foot, while that of the raw material is 85 pounds.

The Krippendorf-Tuttle White Cliffs Products Company now is turning out whiting, asphalt filler and agricultural lime, each of which is in great demand, and orders for which are dependent on speed for filling only by the available supply of cars. The Proximity of great rock asphalt beds and the demand for asphalt paving is found to create an immediate call for asphalt filler from this plant.

Historic evidences of the geological period are numerous in the White Cliffs and bear a startling proof of the enormity of the volcanic disturbances in ages perhaps antedating humanity. By breaking fragments of the chalk stone in the quarry there are frequently and easily found mussel, clam and other shells, particularly the large sea conchs embedded therein. Some of these shells are perfect, the glazed inner surfaces being as true as if freshly gathered from the beach although they are loosened from the chalk 75 or more feet in the quarry depth. There also are found pine cones, petrified, embedded in the chalk at great depths. These have, through the processes of geology, been transformed into heavy, lead-like nuggets of "fools' gold." In some cases the shells found are the perfect bi-valves, never separated. When broken open these bi-valves are noticed to contain a chalky white substance. Other foreign matter which once evidently was on the earth's surface is occasionally discovered.

Whiting is a chalk ground so fine that its grains can hardly be detected. It is used as a pigment in the making

of paints, for the manufacture of linoleum, rubber articles, glazed chinaware, paper, cosmetics, fabrics, etc. The chalk cliffs of Dover, England, have hitherto supplied most of the lime used for these purposes in the United States. During the year 1919 there was imported from England forty-three million dollars' worth of this material. It has always been believed that there were no deposits in America that would yield products of as high a quality as those from the Dover cliffs. Before acquiring the property in Arkansas, the Krippendorf-Tuttle Company submitted samples of the powdered limestone from White Cliffs to various manufacturers of rubber goods, toilet preparations, and linoleum, for examination. As a result of the tests by these companies and of analysis by several geologists, the lime deposits of White Cliffs have been conceded to be capable of yielding products fully as pure as those from the English limestone.

Through the courtesy of H. W. Seymour, general superintendent of the White Cliff works, a representative of PIT AND QUARRY was enabled to inspect the properties and note the extent of their operations, together with enlargements now in course of construction. Mr. Seymour, who was for a number of years millwright for the Missouri Pacific railroad, with headquarters at Coffeyville, Kansas, has been in his present position since December 21, 1921. For the past year he has devoted his efforts assidiously to the reconstruction and enlargement of the plant. To state that it is satisfactorily approaching the condition its owners expect is a fact evinced by the trend of daily events at the works.

The quarries are being handled by P. H. Van Lear, for twenty years quarrymaster for the Little Rock Crushed Stone Company, with quarries at Big Rock, on the Arkansas river, opposite Little Rock, Ark. Mr. Van Lear extended the courtesy of an interesting visit of observation in his department.

There is a wonderfully picturesque feature presented to the visitor in these white cliffs of chalk deposits, their presence being emphasized by the river bottom environment from which they rise. Alighting from the mixed train upon which the traveler may go to the place, it is a distance of but one-quarter mile along the spur tracks to the mill. This is built on the ledge of the original quarry of a score of years ago, and consists of a group of large corrugated iron buildings and their tributaries, sawmill, machine and blacksmith shops, mill supplies, store room, and offices for engineer and laboratory.

Quarries have been opened at several places during the past quarter of a century, and first class material obtained, the overburden being but scant. Mr. Van Lear now is engaged in the temporary or opening-up stage for the new quarry and is clearing away for a face. He is using type D-24 Ingersoll-Rand air drills. Blasts are made sufficiently strong to crop of such ledges as are immediately needed and without danger to the buildings. A No. 18 Osgood steam shovel handles the overburden in clearing to surface rock. Quarrymen with hammers break the boulders into smaller pieces, after which these are loaded into 1½-yard tram cars, and by gravity run down the tracks into the preliminary breaker. This is a No. 6 Williams mill. From the Williams breaker the chalk is carried by a Webster 18-inch rubber conveyor belt to the raw material storage bins.

At the present time there is but one unit of this storage. It has a capacity of 5,000 tons, and is substantially built on a ledge of the first quarry operated at White Cliffs. The building is of corrugated iron construction and contains twenty-seven heavily timbered cribs, each 16 feet square and averaging 25 feet in height. Two other units of similar size soon will be constructed alongside of this one. The total storage capacity of raw chalk then will be 15,000 tons. These units have an inside measurement of 60x105 feet each.

Further on this raw material is carried by rubber conveyor belts, 18 inches in width, to the reduction plant proper, and there ground in a fattery of three four-roller mills to the fineness named in the early part of this article. At the present time there is a 10-ton rotary drier, but one of 30 tons capacity will be added in the near future, bringing the capacity of the mill up to 36 tons hourly.

The boiler room contains a battery of Geary type of Heine boilers, while in the engine room there is a 350-horsepower Allis-Chalmers engine. There is a 150-horsepower direct-connected generator and a 150-horsepower air compressor. The plant is

equipped with electric lighting and there is a good waterworks system.

Included in the plant are two Bates valve-bag machines with a capacity of 40 tons per hour. The quality of the product which goes into the bags is the pride of the company.

A finished product storage is under process of construction adjoining the reduction mill. It covers an area of 180x105 feet, erected as other buildings, on a ledge of the original quarry, and partial construction reveals a structure of ponderous strength. The capacity will be 2,000 tons of material. There will be two lines of storage units within this building, each being 20x120 feet and 30 feet in height. The compartment cribbing is of 12x12 inch hardwood timber.

Maintenance of the plant is insured by a well-equipped machine and blacksmith shop and mill supply store adjoining the works.

One of the valuable achievements of Superintendent Seymour is that of having ridden his horse over the 2,600-acre tract of supposedly cutover land, then requesting authority to purchase a sawmill. Officials of the company were inclined to receive the request as a joke, supposing there was no worth-while timber left. On being convinced otherwise a Fisher-Davis No. 2½ sawmill was purchased and installed. During the long, dry summer teams and eight-wheeled wagons followed timbermen to the tall uncut, and to date 1,500,000 feet of the best of hardwood timber has been used in plant construction, while 250,000 feet of logs now are in the yards to engage the efforts of the mill men. These are of red gum, oak, ash and cypress, some of the logs being 5 and 6 feet in diameter. Cord wood to the amount of 1,400 cords is piled for fuel.

Only white labor is used at the Krippendorf-Tuttle White Cliffs Company plant and are worked ten hours daily at a good wage. Working and living conditions are excellent and there is a splendid esprit de corps evident, each individual taking the greatest interest and pride in the big mills.

That the company expects to operate this plant extensively and continuously is exemplified in the careful planning and provision of permanent improvements. Notable among these is the palatial office building and superior employees' living quarters. This is a two-and-a-half storied frame building, painted white, located at the apex of a cliff rising sheer 135 feet above the level of Little River, which flows at its base. It approximates in appearance and surroundings the noted "Cliff House," San Francisco harbor.

The building is quite lengthy and has a 12-foot porch the entire length to serve the second story, on which the offices and rooms are located. There are in the basement, or first floor, the mess hall, kitchen, bakery, store rooms, laundry, etc. The second floor contains a large general office with its fireproof vaults, the individual offices of the superintendent, civil engineer, and others. Opening on the long porch are eight bedrooms, each having a large, modernly equipped private bath; a breakfast room for visiting officials, a sun parlor, etc. The upper, or third story, in the roof, is devoted to a well appointed hall, 20x 60 feet, to be used for educational and social functions.

This administration building is reached by a flight of 250 steps with landings between each set of four individual flights. The entire length of these steps is almost 1,000 feet.

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Another important building project soon to be commenced by the company is the village, located on the tract. There are to be built thirty workmen's cottages, all of frame, five rooms and bath and sleeping porches. Electric lights and waterworks will be afforded. A company-community improvement will be a modern school house Mr. Krippendorf has promised the trustees of the school district. There also will be built a commodious and attractive department store building.

All the while improvements and enlargements are in progress, finished products of several kinds are being turned out in large quantities and orders filled as fast as freight cars can be obtained. A good demand is had for the agricultural lime, as much of the upland is deficient in that chemical property, being sour and unyielding for the growth of legumes, corn and other crops. Ten years ago it was difficult for farmers to secure agricultural lime except at a very high cost, due to supply shortage and railroad rates. Of late years there is a special rate on agricultural lime and this soil sanitant now is within the means of both small and average farmers. During the fall months the trade on this product is best.

In the Krippendorf-Tuttle White Cliffs Company plant may be found a machinery equipment which emphasizes the rapid strides which have been made in this branch of reduction operations and affords a finished product which contributes to the excellence of other manufactures.

The plant was designed by the engineers of the Gruendler Patent Crusher & Pulverizer Company of St. Louis and the larger part of the equipment put in by this company.

Slate Will Advertise

Association Adopts Publicity Policy—Traffic Bureau Established.

The adoption of an advertising policy was perhaps the most far reaching move made by the National Slate Association during the slate industry meetings at New York, January 22 and 23.

The slate industry is among the oldest and most conservative of the country's industries and the unanimous acceptance of a cooperative advertising policy in the closing session of the convention marked the opening of a new epoch in the marketing of slate.

While there are a hundred main uses for slate, new uses are constantly springing up and it was because of the marketing ramifications of the industry that the National Slate Association was formed in June 1922.

The primary purpose of the Association is to establish a definite source and responsibility for slate information through a recognized organization and to stimulate the sale of slate products by bringing its properties and uses to the public consciousness.

Headquarters were opened last summer in the Drexel Building, Philadelphia, under Warner S. Hays, Secretary of the Association. Results were so immediate and of such value to the industry that the membership now representing about 80 per cent of all slate production in the United States came to the first annual convention full of enthusiasm and eager to broaden its field of activity.

The sessions of the convention were given over to a discussion of such subjects as "Production Problems and the Elimination of Waste," "Trade Co-operation," "Scope of 1923 Activities" and "Traffic Matters."

An increased assessment for advertising was made on the membership on the basis of sales of slate quarried or manufactured by each active member. Advertising plans were laid out and accepted. These embraced wide consumer and trade advertising.

Another marked step in advance was the establishment of a traffic bureau to supply full information as to shipping and routing. G. E. Brown of Belleville, Ill., was appointed traffic commissioner.

Appropriations for research work and special tests were made. The convention closed its sessions with the adoption of a code of ethics to standardize general practice within the industry.

The officers of the National Slate Association are: President, W. H. Keenan, Bangor, Pa.; Vice-president, G. F. Bernard, Boston, Mass.; Treasurer, A. H. Morrow, West Pawlet, Vt., and Secretary, W. S. Hays, Philadelphia.

Three new directors were added to represent districts formerly unrepresented in the association. These—C. A. Lowry of Auld & Conger Co., Cleveland, O.; C. H. Davis, Davis Slate and Manufacturing Co., Chicago, Ill.; P. C. Stanwood, Blue Ridge Slate Co., Esmont, Va.

The Albany Gravel Co., Albany, N. Y., has been incorporated with a capital of $50,000. Incorporators: C. W. Maxwell, G. K. Smith, W. Green.

The Southeastern Gypsum Company, an Arizona organization, was recently incorporated at San Bernardino, California, with a capital stock of $100,000.

A new stone crushing plant has been opened at Chester, Illinois, by the Columbia Quarry Company, which already is operating six quarries. This quarry is situated on the W. C. & W. railroad, which will insure good transportation.

The Hagerstown Lime & Chemical Company has recently been incorporated at Hagerstown, Maryland, with a capital stock of $30,000. This firm will manufacture agricultural lime and chicken grits. Work has already been started on the plant, and machinery of the latest type will be installed as soon as possible. The incorporators are: J. S. Myers, W. R. Moler and Enos Kitzmiller.

The land board of the State of New York has been urged by a state official not to grant exclusive rights to certain sand and gravel interests to dredge sand and gravel from the Niagara river. The companies in question are under indictment in cases growing out of the Lockwood committee's probe into unlawful building combines.

It Was a Good Convention

Entire Industry Reviewed—Tonnage Basis of Dues Abolished—Schmidt for President

One of the high spots of the Chicago convention of the National Crushed Stone Association occurred at the very first session, Monday morning, when O. M. Graves of the General Crushed Stone Company, Easton, Pa., chairman of the resolutions committee, offered the amendments to the constitution which the committee had been working on over Sunday.

The radical change which the committee had determined upon was the abolition of the tonnage basis for the payment of dues and the substitution of a flat membership fee. The fact that this membership fee was so arranged that small individual producers might take out one membership, while the firm or corporation would be required to take out two, and might take out any additional number they desired, did not prevent the subject from being quite warmly debated, the chief reason for opposition being that it seemed very uncertain whether such a measure would bring in a sufficient amount of money to operate the association. A quietus was put on this, however, by an informal poll of the convention, which seemed to show that just the members present were disposed to take out sufficient memberships to furnish the major working capital of the organization. This being the case, those who desired to hold the matter for further consideration withdrew their motion, and the recommendation of the committee was adopted.

No More Tonnage Dues

This provides for individual memberships of $25.00 per year. This means that individuals doing business alone will be required to take out one membership, making their annual contribution to the association $25.00, irrespective of their tonnage. Firms and corporations must take out two individual memberships of $25.00, and may take out any number they desire above that. This will allow some of the larger companies to take out memberships for managers of their different plants and still not run the cost above what they have been averaging on a tonnage basis.

The provision which has been in force up to this time allowing local or district associations to take out memberships was rescinded and all memberships of the national association will hereafter be by individuals.

The opposition to the tonnage basis of assessment was two-fold. One line of attack was that members did not like in this way to reveal their year's tonnage, and another was that this method of assessment was very unsatisfactory in soliciting new memberships, as with an uncertain tonnage as well as uncertain rate of assessment, the amount which the association would cost a prospective member was so indeterminate that few felt like entering into such an obligation. The associate membership fee was left at $50.00 the same as before.

Other provisions of the constitution and by-laws were revised to conform with the new section regarding membership and dues, such as the elimination of the provision that the board of directors shall be elected by districts and substitution of a provision for the election of fifteen members by the annual convention.

The provision of the by-laws which states that the annual convention shall be held the second Tuesday in February having become a dead letter, it was discarded and the time and date of meeting left to the board of directors.

The secretary's financial statement presented to the convention at that session, while it showed that the association had practically enough money on hand at the beginning of the year to pay all its obligations, nevertheless demonstrated clearly that a comparatively few people had been carrying the financial burden, and it is believed that under the new arrangement the expenses will be more equitably distributed; while the fact that the dues will all become due and payable at the beginning of the year will allow the officers to pay their accounts more promptly and carry on the work of the association in a more businesslike manner.

Sticking to Schedule

President Eames is to be congratulated on opening the very first session

promptly on time, and adhering to this custom throughout the entire convention.

John Ericson, city engineer of Chicago, was the first speaker on the program, extending to the visiting delegates a welcome to the city, and suggesting in closing that he hoped they would not throw any of their material at the city while they were here.

President Eames in a brief opening address outlined some of the activities which the association might well take up during the session, including the revision of the constitution and modification of the basis of dues already referred to. He apparently came to the convention with the high determination to get the association onto a more correctly functioning basis and make it more of a power for the industry. He referred particularly to the matter of immigration and the serious shortage of common labor which our present immigration laws are producing, and he felt that something should be done in this matter, perhaps by the appointment of a committee to meet with a similar committee from the Road Builders' convention in session at the same time. He felt that the matter of transportation was a serious one, and that this matter should be adjusted in some way for the benefit of the entire commerce of the country, else government ownership and control might intervene, a thing which he felt would be disasterous, especially for our own industry where close personal touch with the railroads is so essential to smoothness of operation. He felt also that the rising tide of socialism in this country was a menace with which the organization should deal in some way.

W. C. Huntington of Wellborn & Huntington, business and engineering counsels, Chicago, read a paper on "Business Principles Applied to Quarry Development and Stone Crushing Operations." Mr. Huntington's firm makes a business of compiling reports of various industries for bankers and capitalists, so that he looks on a quarry primarily from an investment standpoint. He felt that quarry operators in general do not have sufficient facts at their command, not only regarding the quarry industry as a whole, but even regarding their own particular operations. He was very emphatic in saying that these facts must be known in order to make a business the greatest success, and that operators should have a general survey of the industry, assembling by whatever means possible the experience of many other operators. He felt that most executives are tied down too closely to their own job, and cited the case of one producer who got very good returns from money invested in leaving his plant to the care of a capable superintendent and going out on a long trip to visit other operators in his particular line. He said that the attitude of producers toward each other has much to do with the merchantability of securities. In other words, that capitalists do not care to invest in fields were cut-throat competition is the rule.

Krause on Transportation

E. J. Krause of the Columbia Quarry Company, St. Louis, was on the program to discuss the subject of the transportation situation. He was, however, too tied up with other matters to attend the convention this year, and a letter from him was read by the secretary. Mr. Krause said in his letter that it is up to all of us to take the "un" from uncertainty. He felt that we are too much dominated by the effect of our foreign relations on business. Ours is a domestic business, he said, and we should carry it on as such, realizing that there is a demand for building of all kinds in which our materials must be used. This being the case he felt that 1923 should make a record to be proud of. Transportation, he said, is the key to success now and in the future, and our greatest success lies in rushing production at the very beginning of the season, and making deliveries just as rapidly as possible while cars are available. He said:

"Salesmanship should be stressed and the work of the salesman kept ever ahead of the plant operation. Excess of production over selling capacity in the organization means ultimate loss not only to the individual company but to the industry.

"Coal is not in the center of the stage this year. There is a possibility that it may assume a dominating position through the fact that certain of the United Mine Workers officials are dominated by the desire to put over a program of nationalization. As you value the right of American initiative and property rights you should combat this tendency toward sovietism at every opportunity.

"Without a strike, coal costs cannot be reduced by the operators in the

The Annual Banquet of th ciation

union fields. A general strike is unlikely. A reduction of wages in non-union fields comparing with that which occured in 1921 is not probable. The large losses sustained by the miner in the strike of 1922 followed by slack working time on account of lack of cars, have reduced his earnings until he will be easy prey to the agitator, and local or wild cat strikes may be expected. It is always safe to have a coal supply in possession of the consumer.

"Transportation is the key to your success in 1923 and the future. This plus our own vision and spirit of optimism and determination and our own hard work. While we are apt to think of transportation in terms of 'cars furnished' still the stone industry can afford to be actively for and cannot afford to oppose or delay any practical highway or waterway program.

"The railroad companies are going to be in position to furnish us equipment this season largely in proportion to the failure of general economic adjustments abroad. Our certainty of success lies in our utilizing the probable plentiful supply of equipment early in the season without committing ourselves to an unprofitable basis of market should shortage of equipment later in the season greatly restrict our operations."

P. C. Hodges of the Marble Cliff Quarries Company of Columbus, Ohio, also discussed the transportation problem to some extent, showing especially that the shortage of cars is very largely due to the division of available cars among too many mines. He showed that over a ten year period, while the production of coal increased only 37 per cent the number of mines increased 154 per cent. This means that a lot of small mines, and mines running on only a part-time basis, are demanding cars, and that naturally more cars are required to serve this large number than would be necessary if the coal industry were not the victim of such extensive over-organization.

Know Your Materials

Mr. Waller Crow, of Waller Crow, Inc., Chicago, engineers who are specializing in the mineral industries, gave the opening talk of Monday afternoon. He urged producers to know the quality of their material and the purposes for which it is best suited. The glass industry for instance, he said, is just now wavering between the use of stone or burned lime, with the preponderance of opinion a little in favor of the limestone. A producer, he said, should know a fact of this kind, and understand wheather or not his stone met requirements for the glass industry. If so, he might be able to find a better market than for

ciation was well attended, as you can see

commercial use. Then again, he said, there are many store deposits now going into commercial stone, which would make very satisfactory hydraulic cement. Regarding lime, he said that lime should be, and he believed ultimately would be, merely a by-product of a crushing plant, utilizing the stone which did not go into commercial uses. Stone, he said, has never received the consideration it deserves, and he made a strong plea for producers to know their material, and understand the market for which it would be best suited. He felt, however, that research must be largely along individual lines, as each plant is a problem of its own, not only regarding its raw material and equipment, but regarding its transportation, market and other governing features.

Stone Man Now Banker

Mr. Crow was followed by J. E. Lindquist, vice-president of the Central Trust Company of Chicago. Mr. Lindquist said he was formerly in the stone business, and he knows it to be a fact that very few of the plants in the central west are now operated by the original owners. Looking at the business financially he said this would seem to indicate that the plants had not been properly managed, so that they probably did not produce an attractive income. He urged upon stone producers that they have available all the facts regarding their plants, including history, markets, valuation, etc., this to be used in case they desire to make extensions and finance new work. He said prior to the era of the income tax he never found an operator who took into consideration the depletion of his deposit or depreciation of his plant. He feels that the income tax has at least been of value in bringing this to the attention of operators. He knows that the operator cannot sit back and wait for business, but must have lines of promotional work constantly under way to develop additional trade. He said that when he was in the business a number of years ago he wrote to Congressman Madden asking him to introduce a bill in congress for the federal aid of road construction, but the congressman felt that this was a revolutionary scheme, highly impractical and could not be put through; so that eventually some one else got the glory for originating the plan in congress. Mr. Lindquist remarked that the superintendent of a plant is more important than the sales manager, and cited one case where an owner in giving a bond issue was required by the bankers to make a contract with his superintendent for a period covering the life of the bonds. They felt that the success of the business depended to such an extent on the superintendent that he must be retained in order to protect them.

Research Urged

Next followed the report of the research committee for the past year. This report was presented by the chairman, Harry Brandon of Piqua, Ohio. He was given the task at last year's convention of forming a committee, making an investigation, and submitting a report.

This report advised that the association take up research work to determine further uses for stone, better methods of preparing stone for present uses, and in fact, all problems of a general nature that can properly be made subject of an investigation.

The report specifically warns against the undertaking of work for the benefit of individual members as such, all activities to be of a general nature and designed to promote the use of stone in such a way as to be of advantage to the industry as a whole, and in this way, to result in good to the individual members.

The program outlined called for an expenditure of $15,000 per year for two years with its continuation if results seemed to justify it and there still remained work to be done.

Some of the most important sections of the report are as follows:

We have a number of very excellent reasons to offer why this project should be undertaken in the manner suggested:

1. Our crushed stone industry is already late in arriving at the well-traveled road of research. We have therefore the excellent example of other industries which have previously seen this same possibility in their businesses. It is not necessary to go into detail regarding the wonderful results of the operation of the Portland Cement Association, Face Brick Manufacturers' Association, Paint and Varnish Association, and many others.

2. There are evidences of wasted energies, shown by accumulation of waste piles which, in their tremendous size, disfigure the appearances of most quarries.

It has cost an equal or greater amount per ton to place this material in these piles than the actual per ton cost of finished product.

The amount of money spent by the members of this Association in the past five or six years either in storing or in attempting reclamation of this waste material would have paid the cost many times over for this project.

In these times of high cost production it is becoming a serious menace to the crushed stone business to have to absorb the cost of producing these wastes.

Every existing hope of eliminating or utilizing these wastes must imperatively be investigated and if no hope presents itself we must invent relief, individually or collectively, before very long or some of us must close down production.

3. The modern trend of industry is toward the elimination of these wastes. We do not want to be the last in the line of progress. We should have been pioneers in this wonderful work of waste elimination.

4. Industrial progress and civilization are frequently tied up with the result produced by the initiative of some alert individual producer. Many things that have registered their importance in the history of civilization have been brought about by some individual being sufficiently wide awake to find some method of disposal of over-production or waste products. Much of our great chemical industry is based on by-products or waste utilization. Glycerine was for long a waste from soap manufacture. Someone made nitroglycerine from it and now we clear our farms and run our quarries and mines with it or its related explosives.

5. The associations that have taken up these projects in the past have the satisfaction of becoming much more important factors in modern industry and are regarded with greater respect than would have been possible for any individual. The members of these associations have profited in direct ratio to the progress and initiative of their organizations along this line.

What Can Be Expected by This Expenditure

1. Tabulate seasonal demands and educate users to rational demands with reference to distribution of unavoidable sizes in production. Provide for the distribution of crushed stone products with a minimum of conflict with the movement of other commodities in transportation.

2. Standardize consumption expectation by finding out the general connection between demand and production capacity, thus enabling both producer and consumer to figure with some certainty upon available production and market.

3. Tabulation of the uses of all crushed stone products based on the tonnage consumed.

A careful study should be made of these uses to see which ones can be extended. There would be very little justification in spending a large sum of money for research in a field which presents but little possibility of expansion.

4. Better information for the salesman regarding the value of his product, obtained through careful study of the results and statistics reported back to the company by the Research organization.

The value of the product is measured by its usefulness, and the cost of the production has little or no relation thereto.

5. Enlist services wherever possible of national, state and other agencies in every way that may assist both the producer and consumer of crushed stone products.

6. An exhaustive investigation of wasted over-production can be conducted so as to lay bare its facts in the hope of developing all possibilities of elimination.

After the preliminary ground has been covered and we are all thoroughly informed as to what is now known regarding the various crushed stone products, we must then consider and study them and delve into the unknown. In

the opinion of this committee, some of the possibilities of the near future are:

1. Development of new and varied uses of crushed stone products.
2. Keeping abreast with current affairs as they concern crushed stone operation, such as translation of technical reports; compilation of reports of various institutes and condensing the meat of them as they concern common-sense business principles, and put them in non-technical language to be clear to every one of us.
3. Assuring our entire membership of the latest developments as they occur in this and foreign countries, the same to be translated and condensed so that the non-technical man can secure all their advantages.
4. Through our Research organization we will establish recognition by the various bureaus at Washington which would be a most excellent introduction in legislative and political affairs that affect our business. This introduction, coming in this substantial way, would insure more prompt response on many other questions such as railroad matters, priorities, legislation, immigration, etc.

Of the committee appointed to make this report, all members concurred in the views expressed except John J. Sloan of Chicago. Mr. Sloan was prepared, right after the paper was read, to give the reasons for his disagreement, but time did not permit just then and, for the sake of adhering to the program, the next number was announced.

The next speaker was Mr. John E. MacLeish of Chicago. Mr. MacLeish was assigned the subject of "Trade Association Activities." It it one that he can handle very well, for he acted as attorney for the Gypsum Industries Association, in the recent action in which it was charged with acting in restraint of trade.

Legal Aspect of Associations

The best way to answer the question, "what may a trade association do?" may be answered, according to Mr. MacLeish, by asking another question, "What may competitors do?" or better still, "What may they not do?" To stay within the law, competitors may not agree to restrain trade unnecessarily, to the fixing of prices, the limiting of production, the division of territory, or to cause the establishment of prejudicial freight rates and other such restrictions. They may not combine or monopolize to the exclusion of other competitors. Outside of these practices, trade associations may do practically everything else to promote trade or bring about more production.

For some time past, the Department of Justice has been quietly investigating trade associations and the investigations conducted up to this time have shown that many associations have a price reporting plan, a bureau for giving out production information, also freight and credit bureaus and departments for the development of the cost accounting plans for association members. The Department of Justice investigation also established that many associations have committees on ethics, or bodies to whom are assigned the work of establishing, as between member companies, relations that will redound to the benefit of the member companies, but to the prejudice of other firms in the same line of business and to the disadvantage of the public. The Department of Justice claims that in many cases the price reporting plan was used to fix prices, that the information on production was utilized to limit production, that freight bureaus were established to have prejudicial rates put into effect, and that they also serve the purpose of dividing up selling territories. The claim also was that credit bureaus serve much the same purpose in a slightly different way. Cost accounting bureaus were said to have arbitrarily established certain costs on which member companies computed selling prices.

Because, said Mr. MacLeish, a number of associations were known to the Department of Justice to be actually operating outside the law, the Department seems to have formed the conclusion that all associations have illegal purposes, and they consequently look with suspicion on the activities of all the associations. Mr. MacLeish warns that as long as this suspicion remains, the activities of all the associations will furnish subject matter for Department of Justice discussion.

This convention of the Crushed Stone Association should do a lot to remove this idea, since all discussion was open and the matters discussed, together with the manner in which they were discussed, were all inside the law.

Gypsum Decision

Mr. MacLeish referred to the impossibility of convincing the Department of Justice that the Gypsum Industries Association was other than what they thought. In his own words, he "laid the cards on the table." Without, however, going into the matter from this angle, the Department of Justice went to the grand jury, which body refused to indict the Gypsum Industries Association. Eventually, the association was enjoined against the

continuation of certain practices, which, Mr. MacLeish said, did not make any difference, since the association was not carrying on those practices.

At any rate, the whole case established the right of associations to do certain things. These things, as included in the government decree, should not be understood as limiting the activities of associations. Associations may organize as corporations to promote the use of various materials by public research, may deal with engineering problems, etc. Second, associations may carry on educational work through schools, colleges, research and scientific bureaus, lectures, the use of the press, etc. Third, they may establish traffic bureaus to publish information issued by the carriers, and to deal with the Interstate Commerce Commission or State Commissions. Fourth, they may encourage the improvement of plant operation, and take steps to promote better housing, sanitation, insurance, etc. Fifth, they may establish credit bureaus and carry on all the legitimate activities of such a bureau.

These general features of the government decree give associations considerable liberty. It is very hard to get a case before the courts and have the limits of an association more strictly defined. One practice, of course, that is entirely prohibited, is that of price reporting. This price reporting, in the words of the Supreme Court, often "centers about a tacit understanding on an open price plan that is apparently harmless." Associations, said Mr. MacLeish, should pay more attention to the general character of the industry and thus discredit the idea that association activities are harmful to the public. That they are not harmful but useful to the public has been proved by the government decree, which really approved associations as necessary.

Following Mr. MacLeish on the program was Prof. James R. Withrow, of Ohio State University, a man who has done much to promote the use of agricultural limestone in Ohio. Professor Withrow's talk was on the value of research. He began by stating that research should not be a local matter, but should be conducted in a general way by industries as a whole. In the case of the crushed stone industry, research would accomplish good by emphasizing the importance of research for the nation. Business operates on experience and research means fact finding or the accumulation of these experiences. The development of the aeroplane and the radio may be ascribed largely to research. Twenty years ago, men knew about the Hertzian waves and the effects produced when these waves were propagated. Research, though, made them worth something and developed the present day conveniences.

This, according to Professor Withrow, is the new "stone age," although it differs much from that other stone age in which savages used as weapons and utensils small amounts of the stone that we today utilize in such prodigious quantities. It was only with the coming of civilization that proper use was made of this necessary material. In the old stone age, a carload of stone would outfit a whole tribe, while today the colossal extent to which we employ it is thousands of times greater. Stone serves a great variety of purposes, and the industry which furnishes this stone has the dignity of antiquity and of aiding human needs and human industry.

Enter Mr. Bowles

The Association was fortunate in having with it at its Convention Mr. Oliver Bowles, mineral technologist of the United States Bureau of Mines. The industry has long known Mr. Bowles through the published reports of his investigations, but this is the first time that any large number of them have had the pleasure of hearing him personally. Mr. Bowles presided at the Tuesday morning session, and opened the program with a paper in which he emphasied especially the engineering aspect of quarry investigations, and the necessity of maintaining an open mind regarding these problems and working them out along scientific lines irrespective of any preconceived notions. In other words he tried to get over to the convention, the Bureau of Mines viewpoint in the investigations which it conducts. The only purpose it has in such investigations is to get at facts and apply them to the best interests of all concerned.

He gave as an instance of what they are doing, the recent investigations which have been made in the slate industry with reference to the disposal of a vast amount of waste which had accumulated at these plants, and the reduction of waste in the future. These investigations led up to the point of

recommendation of slate flour as especially useful as a filler in asphalt pavements. This, he said, might seem an unhappy illustration to introduce before a convention of stone men, inasmuch as either pulverized stone or cement had heretofore been recommended for this purpose, while now asphalt specifications have been modified to include slate. He brought this up, however, as an example of the sincerity of the Bureau of Mines in carrying on its investigations, and tried to impress upon the convention that the truth is not going to hurt anybody and that all will in the long run be benefitted by the most adaptable and economical use of all materials. He said that in quarry investigations the main problems have not been solved in the laboratory but that the quarry itself must be the actual scene of experiments. He realized, however, that as we get down to finer points of scientific research, the laboratory proper will find its true place and will necessarily be used.

Visited 600 Quarries

"During recent years I have visited about 600 stone quarries," said Mr. Bowles. "Many of them are highly efficient operations, but on the other hand I find some processes in use that are as crude as those employed in Egypt when the pyramids were built. The employment of inefficient methods is due partly to lack of capital, partly to tradition or to the influence of methods used in surrounding operations, and partly to unusual quarry conditions, but one great outstanding lack is the failure to apply the principles of engineering to the problems encountered. Some problems may require the experience and knowledge of a trained engineer, and he should be called in consultation. In many instances, however, the operator is quite capable of solving his own problems by applying to them two important engineering principles. The first principle is the ability to see both sides of a question, to weigh the evidence impartially, and to dismiss from consideration any preconceived opinion as to the most desirable solution of the problem. The second important principle is the establishment of conclusions on a sound basis of fact. Thus the preparation of positive data is a necessary function of any investigator, and this can be done only by keeping exact records of tonnage and costs. Few economic problems can be solved without using figures, and no quarryman can hope to solve his problems without the aid of systematic records. Many processes now in use would be abandoned tomorrow if the operator had before him on a sheet of paper a set of figures indicating their excessive cost."

Mr. Bowles made a very favorable impression on the convention and his name on future program will undoubtedly be noted with great interest.

Victor J. Milkowski, engineer of the Morris Machine Works, Baldwinsville, N. Y., followed with a discussion of hydraulic stripping. This consisted of a running comment on a number of lantern slides which were shown, bringing out the point that hydraulic stripping can be used to good advantage when there is a large amount of material to be moved, a good foundation to work upon, plentiful supply of water, cheap power and adequate facilities for depositing the spoil.

This was followed by a paper by Mr. J. Barab of the Hercules Powder Company, Wilmington, Delaware, on drilling and blasting, which will be given separately.

Immigration and Railroads

At this session, Mr. Graves, of the resolutions committee, presented an additional report covering several subjects. The most important of these was a resolution placing the convention on record as believing that the labor and railroad situations are the two most important problems not only before this particular industry, but affecting practically all industries, and in view of the fact that since the output for 1923 was largely curtailed by lack of labor, and while not advocating unrestricted immigration, urging upon the Government of the United States immediate action looking toward the modification of the present immigration laws. Also that the president of the Association appoint a committee on immigration and railroads and that a copy of the resolution be sent to the Road Congress then in session for their approval and cooperation. The committee also suggested sending telegrams to ex-presidents Krause and Rice, also telegrams to Secretary Herbert Hoover and J. C. Roth of the Interstate Commerce Commission, thanking them for courtesy extended to representatives of the association on the occasions of their various interviews with these officials. The committee also recommended that the

report of the committee on research, which was read on Monday, be adopted in principle and carried out to such extent and in such a way as the directors might approve and as might be possible with the funds on hand.

The appointment of an active, vigorous membership committee was also advised. These propositions of the resolution committee were all adopted unanimously by the convention.

The president later announced the following committees:

Immigration and Railroad Committee—B. D. Pierce, Jr., Chairman, W. W. Boxley, J. J. Sloan, J. D. Ohrt, E. J. Krause—P. C. Hodges, A. Acton Hall, W. L. Sporborg, Jas. Savage, F. T. Gucker, Clarence Blakeslee, W. G. Swart, O. M. Graves.

Membership Committee — O. M. Graves, Chairman, B. D. Pierce, Jr., N. L. Hely, J. J. Sloan, A. R. Wilson, Nathan C. Rockwood, E. S. Hanson, T. I. Weston, R. B. Tyler, W. W. Boxley, A. Acton Hall, Mr. Binns, O. C. Dodson, H. A. Major, Mr. Workman, Chas. A. Freiberg, Geo. H. Balfe, A. J. Blair, W. F. Wise.

A letter from a Kentucky producer asked the association to discuss the loading of dynamite without tongs, telling of how his insurance company insisted on this. Mr. Sloan said that "anyone who dropped 60 per cent dynamite into a hole 40 feet deep should have in his pocket a map to Heaven and a letter of introduction to St. Peter."

600,000 Tons a Year

Next came a paper by Alexander McKerman, superintendent of the New Haven Trap Rock Company, New Haven, Conn. In this paper Mr. McKerman gave a good general outline of practices at the workings under his management. He began by telling of the production of 600,000 tons of trap rock in the 9 producing months of last year, told of the light over-burden easily removed by revolving shovels and teams, and the drilling which is conducted both vertically and horizontally. Vertical well drills go down 40 feet of the 60 foot face, are 8 inches in diameter, 20 feet apart and 30 feet back from the face. Horizontal snake hole drills are 28 feet back and 7 feet apart and are put in at floor level. Vertical holes are double loaded, a charge at bottom and one near the top separated by tamping. Two detonators are used in both the horizontal and vertical hole firing, leaving little chance of a misfire. Loading is by shovel into 6-yard dump cars, standard gauge. These bring the rock to a 48x72 jaw crusher with secondary reductions handled by gyratories.

A. C. Vicary, vice-president of the Erie Steam Shovel Company, showed a number of slides of various models of the Erie shovel. Mr. Vicary's desire to help speed up the program caused him to pass up discussion on the Erie Company's prize contest on steam shovel operating costs. The pictures, however, were very good and showed the range and durability of the machine in an effective way. A feature of this group of pictures was the view of the back-acting dipper, something new in this line.

Blasting in a City

Otho M. Graves, assistant to the president of the General Crushed Stone Company at Easton, Pa., when called on to tell about "Blasting Experiences in the City," spoke of the difficulties that his company had at Winchester, Mass. in a quarry that they took over in 1919. At the time the quarry was purchased, they considered as one of the factors in arriving at a decision the proximity of a group of houses, the nearest about 2,000 feet from the quarry. Upon assuming control, they were immediately requested to pay a number of bills for damage to some of these houses, the damage ascribed to blasting operations at the quarry. Thinking that there would not be many such cases, they settled the first few at prices ranging from $50 to $300 per house. Immediately, claims began to come in from many property owners of the group of houses mentioned. The stone company, becoming convinced that the damages were not due to blasting, had installed in a considerable number of places in over two years' time, two portable seismographs, instruments for recording ground vibrations caused by earthquakes or other causes.

The experiments conducted over two years showed that the vibrations caused by blasting were not nearly of sufficient intensity to cause any damage to the houses. In fact, it was shown that a force no greater than one-hundredth of that required to damage the buildings was produced by the vibrations that resulted from the blasting. On the strength of this data, so carefully collected, the company began a policy of refusal to pay damages alleged to have been caused by

blasting operations. Immediately, an occupant of one of the houses started suit, introducing no testimony other than the general statements of persons in the neighborhood, who could advance opinions but no real evidence. The suit was begun in October, 1921, and it appears in the courts about once every week, continuing up to the present time. The result of this case will establish a valuable precedent.

"Missouri Locomotives"

Norman L. Hely of the Edward Hely Stone Company of Cape Girardeau, Mo., spoke very interestingly on conveying methods employed at the Cape Girardeau quarry. For haulage power, they use "Missouri locomotives," in other words, mules. Mr. Heyl drew attention to the fact that no set conveying system can be established at their quarry due to the lay of the land with respect to the plant and the quarry faces. Stressing the point that haulage is the most important factor of economical quarry operation, he showed by clear description and good stereopticon pictures, how the mules are utilized most efficiently. Six-yard cars are used, and the mules, in some cases, are worked in teams, an unusual thing around a quarry. It was necessary, for the sake of the mules, the harness, the cars, and the driver, to find the proper means of applying this mule power to the quarry cars. This was done by the designing of special harness which would keep the single and double trees from running into the mules and entangling them. This harness employs a solid metallic piece running back from the collar and held up by the breechings.

Crusher Men Have Innings

C. G. Buchanan, president of the C. G. Buchanan Company of New York City, delivered a paper on "The Jaw Crusher as a Primary Breaker." Mr. Buchanan's paper constituted quite a complete treatise on the advantages of the jaw type machine. While necessarily technical throughout, Mr. Buchanan strove to make his argument as easy as possible for a non-technical man to understand. Among the arguments adduced to prove his contention, Mr. Buchanan claimed for the jaw crusher the slightest pressure on bearings and the greatest leverage, stating that rolls greatly strain the bearings and that gyratories impose a heavy burden on the eccentric. He stated, too, that the value of the jaw crusher was enhanced by the fact that it has a wide range of adjustment, that the parts are in plain sight, that the regulation of the jaw swing is managed without difficulty, that the drive is more direct, that it is easier to take it apart and to compensate for the results of wear.

The afternoon deliberations began by the reading of a paper on "The Gyratory Crusher as a Primary Breaker." This paper was prepared by W. J. Roberts, president of the Traylor Engineering & Manufacturing Company of Allentown, Pa., and was read by Mr. Hayes of that company. The paper was technical to a considerable extent, and necessarily so, and made for the gyratory as good a case as Mr. Buchanan's paper made for the jaw crusher. The paper gave as reasons for the gyratory crusher's superiority the large opening which acts as a hopper, and keeps an amount of stone always ahead of the crushing surfaces, in the face of irregular production. It was stated that, utilizing the same opening as the jaw crusher, it was possible to put out three times the production. Ease of speed control was set down as another point for the gyratory, as were the curved crushing surfaces and the possibilty of producing a smaller product. Crushing shock was claimed to be more evenly distributed by the gyratory, because of its continuous action as distinguished from the intermittent action of the jaw crusher. The claim that the jaw crusher was more accessible for repairs was disputed in Mr. Robert's paper, stating that the gyratory is just as accessible for repairs. More rapid development of the gyratory crusher was pointed out as proof of the possession of greater possibilities than the jaw crusher. The early type gyratories were rather light and did not stand up under abuse. Since then, they have been made heavier and otherwise greatly improved, this improvement extending also to the lubrication systems employed.

Brownell McGrew of the Allis-Chalmers Manufacturing Company was to have delivered a paper on "Roll Crushers as Primary Breakers." Mr. McGrew was unable to appear before the convention because of work that kept him busy elsewhere. However, he sent in his paper on the subject, but because it would take at least a half hour to read, was not brought before

the convention and will be published at a later date.

A talk that gave the A-B-C's of washing and separation of sizes by hydraulic methods was made by Edmund Shaw, a consulting engineer of Chicago. Mr. Shaw illustrated his talk by charts. He showed the character of top, rising, and hydraulic water currents, which last is a resultant of the actions of the top current of a current introduced at the bottom of a settling device. Early in his talk, Mr. Shaw gave the limits of good work in hydraulic sizing, showing how well rounded ¼-inch stones could be handled, while with angular stones ⅛-inch would be about the average.

Hydraulic Separation

Mr. Shaw explained how hydraulic separation theories take note of the grain weight rather than the grain dimensions and how it is possible, knowing the product required to be separated by hydraulic methods, to calculate the current velocities sufficient to get an effective separation of any particular finenesses; also, how knowing the current velocity and the specific gravity and general sizing of the material, it is possible to tell what finenesses can be secured.

Charts showed the use of each of the three currents referred to above, explaining how a top current running over a washing box will accomplish the same work, but not nearly so much, as will be accomplished by the use of a rising current set up by introducing the water into the box in such a way as to make it flow down in the center and up the sides and from there, over the edges. The top current is effective for heavy materials that do not require much washing; where there is considerable clay, the top current causes deposition of this material. He illustrated how small changes in size of round pebbles cause great changes in weight, and showed in which cases hydraulic separation is better than separation in screens. He emphasized, too, the fact that currents must be uniform, for streams of material are very sensitive to current speed changes. Mechanical devices must be provided to stabilize the current action.

Mr. Magrath of the Consumers Co. Chicago, prefaced his discussion of crushing and screening by a statement that little information on screens of various kinds is available. In view of the fact that requirements of architects are yearly making the matter of screening more and more important, Mr. Magrath devoted an amount of time to the general subject. Some of his findings in this investigation form in part the paper presented at this time.

He told of the Consumers Company's practice of using rotary screens on nothing below 1⅛ inch, this meaning the aperture and not size of the stone. He has found that the most convenient screening on sizes below 1⅛ inch is secured through the use of vibrating and shaker screens. Only by the use of these screens was the Consumers Company, he said, able to come up to the strict specifications under which they sell considerable material. An example of the strictness of these specifications may be gained from the Consumers Company's experience in having stone containing less than three per cent of minus ¼ inch, turned down.

Taking up, one by one, the various features of the screen that aid this performance, he talked first of the diameter. This matter of diameter is governed considerably by the productions expected per hour. Larger diameter screens with more flattened convexes would be expected to thin out a product in going through the screens and thus help the screening process. Material, in going through the screen, assumes the form of a helix; that is, it travels in practically a helical path. Large particles help the matter of screening. The matter of feed is important, neither an overload or an underload being desirable.

Referring to the inclination of rotary screens, Mr. Magrath mentioned the general practice of inclining the horizontal axis at 7 degrees. Smaller screens would be inclined less, and longer screens more.

Other parts of Mr. Magrath's paper, referred to the efficiency of output. He stated that he has often, in practice, found it economical to use two screens instead of one, the second carrying only a light load and accomplishing a close separation. He spoke, also, of the percentage of openings in screen plates and the advantages in certain cases as between perforated metals and wire mesh. He laid down the axiom that the length of a screen varies inversely as the openings in a screen plate.

An important truth in screening that was touched upon was that the action

of a particle of stone going through the screen should be rolling rather than sliding. Stone should be carried up 45 degrees in the direction of rotation and rolled back, this giving more desirable results than a sliding mass.

Storage and Shipping

Gordon Smith, of the J. C. Buckbee Company of Chicago, gave a very good talk on storage and shipping, illustrated with lantern slides. The paper was as non-technical as it is possible to make such a production. In it were given descriptions of various ground storage methods and costs on all of these methods. Mr. Smith gave as factors in the matter of deciding on ground storage, considerations as to, first, the amount of storage desirable, this based on average output and amount shipped, which constitute the experience of the plant. Along with this experience must also be figured its expectancy or chances of broader or varying markets in the future; second, the extent of the space available must be carefully considered; third, the cost of operation must be estimated as closely as possible, since the installation of the wrong method would prevent any lowering of production costs; fourth, the cost of installing the system must be thought of, and the figure representing the expected profits of the apparatus set opposite this installation cost; fifth, car supply, the weather during the times that it is expected to utilize ground storage, and many other items must be considered.

Mr. Smith, referring to limestone, said that the piles should be as deep as possible, and the weights and angles of repose well considered; 40 to 60 feet of height are considered economical in bridge type storage systems, 35 feet for trestle type systems. Above all, the installation should be simple, easy to operate, and should be easy to repair with unskilled quarry labor. Any system put in must be capable of easy enlargement, must be flexible in operation, and handle large and small amounts economically. The system installed must, in most cases, provide for the storage of various sizes, and this in such a way as not to mix the sizes and necessitate rescreening.

Taking up the various types of storage systems, Mr. Smith mentioned first the belt conveyor, equipped with shuttle, scraper or tripper, and operating with various belt sizes at various speeds. These belt conveyors are mounted on trestles above and parallel to the piles. Sometimes the belt galleries are covered, sometimes open. The belt conveyor is a very economical system to operate.

Then there is the locomotive crane which, because of the low first cost, is often installed. Another point in its favor is that it is used for both stocking and reclaiming. It is also the best device to use to keep away from the tendency of stone in being piled to run the large sizes at the outside of the pile. The locomotive crane deposits sizes on the pile just as it picks them up. On the other hand, its operating cost is higher than the belt conveyor.

There is the aerial cableway, which necessitates a large installation cost, but it is comparatively inexpensive to maintain. This is used to a considerable extent in large stock piling operations. The gantry crane is also intended for big piles and carries with it a considerable installation cost.

A method of stock piling which Mr. Smith set down as very uneconomical is that entailing the use of small cars propelled along the trestles by man power and dumped at any point desired.

There is the stationary revolving crane equipped with two arms that build up a round stock pile. This device, because of the installation and operation costs, must deal with very large capacities.

The pivot bucket conveyor is another stocking-out device that operates on the general plan of the belt conveyor, except that the deposition of material is accomplished by tipping of the buckets at the proper places, instead of scraping materials from a belt.

The single line cableway is another stocking-out method employed in a number of places. Among these is the Buffalo Cement Company, whose installation was described and shown by lantern slides a little later in the program.

Mr. Smith was succeeded by Charles A. Freiberg, of the Buffalo Cement Company, who described his aerial cableway as capable of stocking out 40 or 50 tons per hour at small cost. This cableway is operated by two men, one loading and one at the tower. The system has been in use for about 25 years. It was once operated by steam, but has since been electrified, running from a 25 horsepower motor. It is very economical to maintain and requires nothing but labor, power and a small

amount yearly for keeping the bucket in shape. Labor cost is from 1 to 1½ cents per ton produced. Reclamation is by locomotive crane.

After these discussions on stocking out methods, A. L. Moscrip of the Consumers Company of Chicago asked if any of the membership had definite ideas on the exact time when a plant should be shut down, assuming that there was sufficient storage to carry through the winter.

Mr. Sporborg of the Rock Cut Stone Company of Syracuse, New York, also asked that discussion be started along these lines. Nothing very definite could be developed.

The matter of how to prepare ground for storage, how to keep stone sizes right in reclaiming, the feasibility of the dragline scraper, and a number of other points also furnished subject matter for discussion.

Mining Limestone

W. S. Snyder of the Templeton Limestone Company of Templeton, Pa., told of the limestone mining operation of his company. His remarks were supplemented by J. C. King of the Carbon Limestone Company of Youngstown, Ohio, who told of instances in Pennsylvania where the cost of mining limestone was said to be as cheap as the cost of quarrying. His statement differed considerably from that of John F. Schroeder of the Linwood Stone and Cement Company of Davenport, Iowa, who told of a man mining limestone at Moline, Ill. This man had told Mr. Schroeder that his costs were not anywhere nearly as low as those of the quarryman.

The next speaker was Geo. E. Deatherage, general manager of the Hoar Shovel Company of Duluth, Minn., who talked on a new shovel made by that company, which operates with only 7 feet of head room. It is a very small machine, intended for fast work and for installations where portability of the shovel is a valuable feature. His statement that it could be brought through a door 7 feet high made a big impression.

Thomas Robins, Jr., of the Robins Conveying Belt Company of New York City, spoke on the new power grizzly made and distributed by that company. This grizzly consists essentially of rolls with rings that are part of the roll and stand away from the roll proper. This machine was originally used in the coke field where it had the shape of a number of serrated discs. These power grizzlies are installed in a number of limestone plants. Mr. Robins claims for his machine a power consumption of 1/7 the amount used for securing the same output through a rotary screen, power being utilized only to turn over machinery that is touching stone all the time. It has not the drawback of the bar grizzly which requires too much labor for cleaning. Capacity for a 5-roll grizzly installation was set at 1,000 tons per hour on a maximum power consumption of 25 horsepower. There are 9 models for the accomplishment of various separations.

Steel Belt Conveyor

The steel belt conveyor, which has been attracting an amount of attention lately, was explained to the convention by Harry Carlson, manager of Sandvik Steel, Inc., New York City. Thousands of these steel belts are installed in Europe and our American engineers are found very receptive to the ideas connected with their use. A steel belt is simple, it is cheap to install and operate, and presents to the abrasive action of the conveyed material a hard, smooth, dense surface. Idlers are placed far apart, or the belt may be used as a sliding affair, with or without skirt boards. Conveying may be done on both the upper and lower runs.

"Electric Storage Battery Locomotives" was the large topic assigned to C. W. Chappelle of the Ironton Engine Company, Ironton, Ohio, who handled it well. He told of the advantage of the storage battery machine over trolley and third rail systems which, in quarry operations, are unsatisfactory because of the exposure of trolleys and rails to dangers from blasting operations, and the greater work required for the shifting of tracks and power sources. The battery locomotive has not these limitations, and Mr. Chappelle said it is only a question of time when it will be generally accepted. The first cost is higher, but operation is cheaper. It has a great drawbar pull. It is operated from either of two types of batteries, the alkaline battery or the lead battery. Manufacturers' guarantees on locomotives and batteries make it easily possible to estimate costs of operation with accuracy. Five to seven year guarantees are usually issued on the Edison alkaline batteries, three to five years on the lead types. Charging is done overnight with apparatus that has been

made fool-proof and leaves no opportunity for overcharging. Storage battery locomotives are used largely in Germany and other European countries, under conditions paralleling or approximating those in the average stone quarry.

The Kennedy-Van Saun Manufacturing & Engineering Company of New York City was represented by W. T. Cavanagh, engineer, who told of this company's gearless crushers. On the small models used only as finishing machines, Mr. Cavanagh claimed operation on 25 per cent less horsepower. He presented a sketch of the machine. This crusher has vertical concaves, is high speed and, so Mr. Cavanagh claims, gives much less dust than the slower speed crushers. One large producer crushed 350,000 tons of silica rock without changing concaves. Among the larger machines that the company makes is a 66, the biggest size in the world, two of which have just been shipped to Japan. In general, Mr. Cavanagh claimed for his crusher a reduction of friction by the utilization of three instead of two bearings. Mr. Cavanagh then harked back to the discussion on storage earlier in the program, and told some of his own experiences. He stressed the importance of the influence of the crusher on storage, and gave an example of a company that was able to install an economical storage system by making revisions in its crushing plant.

Magnetic Pulleys

The application and value of magnetic pulleys in crushing and grinding plants were set forth by Mr. Stearns of the Magnetic Manufacturing Company of Milwaukee, Wis. He began by the general statement that a magnetic separation device can be applied with advantage and economy to a crushing plant where the material to be crushed or ground contains what is commonly called "tramp iron." He spoke of the many chances that there are for "tramp iron" to fall into the stone. Broken drill points, chains, coupling pins, rail spikes, nails, iron straps, and tools are likely to be found in the stone. Magnetic separation absolutely removes the danger of this iron getting into the reduction machinery. Single accidents have frequently cost thousands of dollars and the comparatively small price of the magnetic separator is a good insurance investment. Mr. Stearns concluded his talk by reading a telegram from the Blue Diamond Company of California, who stated that results secured from their magnetic pulley installation were far better than they had expected and that they considered it a valuable addition to their equipment.

It Was a Good Banquet

On Tuesday evening, the Association members attended a banquet, held in the Grand Ball Room of the Hotel La Salle. The affair was very well conducted and was undoubtedly enjoyed by all present. The meal was very well prepared, the speakers were men of prominence, and the toastmaster discharged his office with finesse, appropriating as little as possible of the program to himself, and keeping the proceedings going all the time.

Fred C. Murphy of the Brownell Improvement Company, entertained the diners with a number of songs to which his splendid voice did credit. Mr. Murphy was accompanied by H. E. Hopkins who, with his other accomplishments, is a finished pianist. The performance drew down plenty of well deserved applause and brought a number of encores.

The toastmaster was John J. Sloan of the Wisconsin Granite Company of Chicago, Ill. He addressed the banqueters on "Our Industry," a topic that gave him an opportunity to deliver a highly colored speech. He very gracefully avoided this opportunity and made a short talk which, while eloquent, was simple. At the conclusion of his talk, he introduced the first speaker of the evening, W. H. Finley, president of the Chicago & Northwestern Railway.

Railroad Presidents Talk

Mr. Finley's subject was "Transportation." He began by a comparison of our present highly developed methods of transportation with the primitive methods of times not so far back. The pioneers of this country, in their advance upon new sections, depended mostly upon the waterways that they encountered in their travels. Hence, in the early pioneering at least, settlements spread outward from rivers, which were the highways in those times. Various methods of land transport were in use, but depended entirely upon animals for power and were subject to a good many limitations that made transportation and travel matters not to be thought of lightly.

Then came the railroads, and with their advent the real growth of the

country began. They are directly responsible for the development of whole sections of this country, notably in the West, and have always been a means towards making these United States, in the true sense of the word, united.

Today the railroads have much to do with the prosperity of the country. But they also face many problems. These problems whole groups of people who know nothing about railroading are ready to solve and, as Mr. Finley says, the hardest thing about the railroad business is this continuous interference with its affairs. The roads are, however, in good condition, and if left alone, will soon get in better condition. Much equipment is being replaced and repaired, and additions to the rolling stock and other facilities are being made by many roads. The car shortage bugaboo is not nearly so portentous as it was.

Although the mere addition of cars will not solve the question of shortages, additions are being made and equipment is being put in much better condition than it was a short time ago. Ideal railroad conditions call for not more than 5 per cent of the cars in bad order, and not more than 12 per cent of the engines. This ideal condition is being more closely approached in many places. The real cause of car shortage is the tangling up of cars on various lines, and the holding of cars too great a length of time for loading and unloading. The shippers can help the railroads considerably by giving early notice of their requirements and by quick loading.

Everything, Mr. Finley says, points to big business, and the railroads are preparing. They fear only a labor shortage. Labor is scarce now and, depending as it does to a large extent upon immigrants whose entry into the country has been limited, is becoming scarcer. Mr. Finley believes that, since Americans will not do the hard work of railroading, the doors should be opened to all who can be assimilated and taught American ideals.

Mr. Finley concluded his talk with a short statement of his position in the matter of quarries operated by railroads. His experiences along these lines have been uniformly unsatisfactory. He says that a railroad is an operating and not a manufacturing organization. Railroad men have a training that is different from that of quarrymen, and do not make good quarrymen.

C. H. Markham, president of the Illinois Central Railroad, next told the quarrymen present of "The Public's Interest in the Railroads." He said that too many are using political pressure against the railroads. Political rings, anxious to take over the management of the transportation systems, are doing everything they can to discredit the roads, and the roads are forced in self-defense to do many things that they do not like to do, but which are essential for their preservation. Many railroad critics think that any good business man ought to be able to run a railroad, but Mr. Markham reminded us that a railroad is not like most other activities; it is a service, not a business.

Referring to the waterways, Mr. Markham stated that all that waterways could handle in the way of freight would not be a "drop in the bucket" to what railroads are handling now. He spoke of the 50,000,000 ton total export and import tonnage of the entire United States, and said that this tonnage is just about what one road, his own, carries. The total tonnage handled by the railroads of the United States last year was 1,000,340,000 tons. The Mississippi River, which parallels a large part of the road of the Illinois Central, on which operates the new government barge line from New Orleans, accounted for only 665,000 tons as against the Illinois Central's 50,000,000.

During 1922 the roads have bought more cars and engines than ever used before, this in spite of the imminence of the La Follette Valuation Act. Referring to this act and its expressed and implied claims that railroads are over capitalized, Mr. Markham alluded again to the case of the Illinois Central, which is capitalized at $388,000,000, and operates a trackage of 10,000 miles. This would mean a cost per mile, including equipment and all, of $38,800 a mile. The road has 75,000 freight cars and 18,000 locomotives which, very conservatively valued at only a part of their replacement cost, would be $155,000,000, leaving $238,000,000 of the capital for stations, repair shops, roundhouses, and the other many facilities of a modern railroad. This would mean that a mile of road be valued by the railroad at $23,000, as against amounts of $25,000 that are being paid for concrete road in Illinois. This, of course, would be the price for merely a single track road.

Mr. Markham's talk terminated with the assurance that the railroads were doing everything they could to help the shippers and, if left alone, would accomplish this purpose.

Next on the program came Dr. William K. Hatt, director of the advisory board of the Division of Engineering of the National Research Council. Dr. Hatt read a paper that contained a great deal of interesting data on the road building movement now on in this country. He brought up many comparative figures on the costs, convenience, and general desirability of highway and railroad transport, with the comparisons showing up considerably to the advantage of the highways. He went at length into the subject of the movement of vehicles on public highways, and recommended the adoption of a number of road regulations to facilitate movement.

Eames Reviews Growth

W. Scott Eames, president of the National Crushed Stone Association, delivered a short, a very short, talk that was also very much to the point and consequently very good. In his talk, he referred to the growth and present standing of the industry, which may be ascribed largely to the activities of the association. Mr. Eames expressed his gratitude for the co-operation given him by the officers and membership and assured them that it had been a pleasure for him to control the destinies of the association during the last year.

S. L. Squire, official representative of the Canadian Good Roads Congress, extended "Hands Across the Border" in a talk, the sincerity of which may be gauged by Mr. Squire's very honest criticism of us for the penalties that we have in recent years put upon Canada in the way of tariff and exchange. In spite of this, Mr. Squire said, we have still many points of contact with Canada and should work with her in accomplishing our common destiny. He spoke of the great future Canada has before it, of its untold resources, and its active, intelligent population.

James H. MacDonald, treasurer of the American Road Builders Association, told of "The Good Roads Show," which this year was bigger than ever before. Mr. MacDonald, who has been called the "MacAdam of America," said that he thought it would be a long time before the sun set on the last mile of macadam road. He paid his respects to the use of bituminous binding in macadam roads by saying that it was the worst thing that could have been done to discredit a good material; that the macadam road, because of its softness and yielding capacity, was in certain circumstances superior to the concrete road. Mr. MacDonald has been a pioneer in road building methods ever since, years ago, he began to interest himself in this important industry. He has always been associated closely with stone producers, knows their difficulties, and has always co-operated with them. He is, therefore, always more than welcome at any gathering of crushed stone producers, a sentiment that he said he felt towards the producers themselves.

An address by A. P. Sandles, expressing his apreciation to the officers and membership of the National Crushed Stone Association, completed the program.

Between the various numbers were given vocal and musical selections by the Chicago Glee Club. The selections were very well received if the applause they drew down can be taken as an indication.

Cost Accounting

During the Wednesday morning session, A. J. Blair of the Lake Shore Stone Company of Milwaukee, Wis., a past president of the association, presided.

The first speaker at this session was George W. Hafner, expert cost accountant of Chicago, who talked on cost accounting principles and their application to the crushed stone industry. Mr. Hafner referred to the well known tendency of us all to stand out against progress, to malign progressive movements before they are successful, and to acclaim them after they are successful. Many business men suffer from this common tendency and do not follow in line with progressive movements such as, for example, the better keeping of costs which result in a better knowledge of the business. Facts and figures must be compiled accurately and understood carefully if a man is to know the reasons underlying things in his business. In the crushed stone business, Mr. Hafner said, the individual producer should know how the industry stands as a whole, and should then learn more about his own business to see that it is

keeping up with the march of progress. In other words, associations should establish standards, and individual firms should try to measure up to those standards. Mr. Hafner illustrated his talk with a number of charts which showed how the various facts of a business may be made more easily understood by the use of graphs.

The subject of cost accounting brought up general discussion on some items of cost around a quarry. O. M. Graves showed charted cost figures of his company, for limestone, quartzite, and trap rock operations. It was found that costs of various producers on some of the common quarry operations were two and three times as much as the costs of other producers.

Oliver Bowles spoke of the necessity of exact records on new work, and stated that, in his investigations for the Bureau of Mines, he found it very difficult to get anything but expressions of a very general character on important phases of quarry operation.

Depletion Discussed

Next followed a general discussion on depletion. I. S. Tinker, of the Connecticut Quarries Company, stated that the government on their last income tax return, had allowed a depletion figure of ½ per cent per ton on all the trap rock they produced. Mr. W. L. Sporborg, of the Rock Cut Stone Company, Syracuse, New York. was told by government field operators that the ½ per cent depletion figure is an arbitrary figure effected by other considerations. Mr. Sporborg has found that the decisions of the field auditors is frequently overruled by Washington.

J. J. Sloan of the Wisconsin Gravel Company stated that in his operations field auditors, backed by Washington authorities, allowed 5 cents per ton on rhyolite, quartzite, diorite, and granites, and 1¼ cents per ton on limestone. These figures were based upon the length of time the deposit is supposed to hold out. Mr. Sloan believes that if the facts about an operation are sufficiently known and properly set before the government, proper depletion figures will be allowed.

A. R. Wilson, of the Granite Rock Company of Watsonville, Cal., said that the Association should have an accounting department, and cited the case of the San Francisco Contractors Association, who recently established engineering and cost accounting departments to whose findings all members have access.

George E. Schaefer of the Rochester quarry of the General Crushed Stone Company gave an interesting paper on "Merchandising Quarry Products." He stressed the fact that quotations should be given in writing or confirmed in writing; that there should be a 10-day acceptance clause to guard against changes in price or production; that the practice of immediately investigating winners of bids should be put into effect so that quotations to them could be made without loss of time. The terms of sale should be given clearly and completely, with all features of the contract properly covered. The giving of discounts helps. Although there must be some pliability in dealing with customers in the matter of taking up materials ordered, customers must be made to accept delivery on stone ordered. Freight prepayments should be discouraged. In general, the sales department should be governed by the operations of the quarry.

Harry H. Brandon, of the Ohio Marble Company of Piqua, Ohio, spoke of the need for better salesmanship and the greater need for better salesmanagership in the crushed stone industry. Mr. Brandon in a very good paper stated that more salesmen fail because of a poor sales manager than for any other reason, and that a sale should in most cases be made before the salesman gets on the job. Dealers must be helped in the development of markets. To show how this is done, Mr. Brandon outlined a campaign conducted by his company in Western Ohio which was very successful.

The committee on resolutions offered a resolution that the board of directors consist hereafter of 19 members instead of 15 as heretofore, and the motion was carried.

New Officers

The nominating committee placed before the association the following names:

President, F. W. Schmidt, Morristown, N. J.

First vice-president, W. H. Hoagland, Columbus, Ohio.

Second vice-president, W. L. Sporborg, Syracuse, N. Y.

Directors: F. Scott Eames, John Rice, A. J. Blair, A. Acton Hall, J. J.

Sloan, B. C. Pierce, Jr., W. G. Swart, O. M. Graves, W. W. Boxley, N. L. Hely, A. R. Wilson, Allen Patterson, C. M. Doolittle, James Savage, H. E. Blair, R. W. Scherer, J. F. Schroeder, R. B. Tyler and Thomas McCroskey.

The above officers and directors were all elected unanimously.

Reducing Accidents

At the general luncheon on Wednesday the speaker was Sidney J. Williams, chief engineer of the National Safety Council, who spoke on "Reducing the High Cost of Accidents." He said that accidents are costing industry a billion dollars annually, and called attention to the fact that in the quarry industry there are two men killed and 170 injured per thousand every year. This is practically the same percentage of accidents as prevailed in the steel industry a dozen years ago. Nevertheless the steel industry has by careful study of the accident question and a determination to decrease the number of accidents reduced the percentage to about one-fourth what it now is in the quarry industry. The result is that quarrymen are now paying on an average about twice the rate for indemnity insurance as applies to the manufacture of steel.

He said that steel manufacturers have not only studied safety devices and have applied them to all their processes, but they have also studied the human element in their plants and have taken every means to get across to their workmen, even those who do not understand the English language, the safety message. He said the place to begin in a safety campaign is at the top, and that the reason such success has been attained in the steel industry is because the orders have gone out from Mr. Gary, Mr. Schwab and other leaders that the percentage of accidents must be reduced.

The two industries are, of course, not parallel, the quarry business being in much smaller units, but the same process of accident elimination can be applied. The quarry owner must be fully convinced of the necessity of getting accidents to the lowest point, and then one man must be held responsible for keeping accident prevention rules in force, and making observations around the plant looking toward the further elimination of accidents. The appointment of such a man, of course, will depend upon the size of the plant. Some large organizations will have a department which will look after this entirely. In the smaller type of plants the superintendent, or one responsible workman, will have this assigned to him along with his other duties. Mr. Williams pointed out that the rate applying to quarries need not necessarily be uniform in a given district, but that the history of a plant will very largely determine the rate, so that any producer, by running along for a period of years with a very low percentage of accidents, will be able to get a better rate than where less care is exercised.

Special Uses and Merchandising

At the Wednesday afternoon session John J. Sloan of Chicago opened the program with a paper on special uses of crushed stone. This paper is given almost in full in another part of this issue.

He was followed by Mr. R. W. Scherer of the Western Lime & Cement Company, Milwaukee, who spoke on merchandising crushed stone products. Mr. Scherer devoted practically all of his time to what he calls crusher-sand, otherwise known as screenings, which term, however, he objects to as seeming to indicate merely the refuse after other more desirable parts of the stone had been removed. He asserted that crusher-sand is not inferior to natural sand, and that it must be given a good name, and offered to the building world as a product in every way creditable and worthy of confidence. He believes that salesmen should have a thorough knowledge of their material, should know the tests and screen analysis of the crusher-sand they are selling, and be able to satisfy architects and engineers regarding its technical qualities.

He was subjected to some criticism by reason of his statement that a crusher-sand containing 20 per cent of fines passing a 100 mesh sieve is the most satisfactory. This was objected to by some of those present, not only on technical grounds as not being borne out by some of the tests which have been run, but also for commercial reasons as not being able to meet highway specifications, at least in some of the states where a percentage of only 3 to 5 per cent of dust is allowed.

Prof. D. A. Abrams of Lewis Insti-

tute, Chicago, gave in a general way the results of some tests on stone screenings as a fine aggregate for concrete which had been made under his supervision, and as a result of which he felt able to assure the convention that by the proper proportioning of all the materials just as good a concrete could be made in this way as with natural sand. He said, however, that it would require perhaps 20 per cent more water.

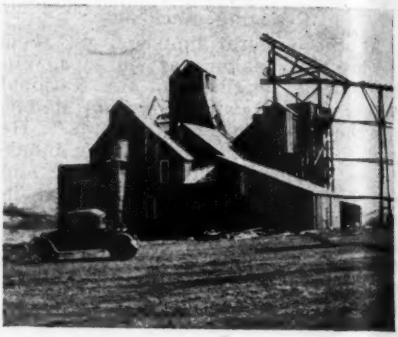
Mr. Hull of the U. S. Bureau of Standards, Washington, D. C., gave some general data regarding fire tests which have been made by the Bureau on reinforced concrete columns, showing the advantages of crushed stone for this purpose over other materials.

Before the convention closed Nathan C. Rockwood, editor of Rock Products, was introduced by Mr. Graves and was given an enthusiastic vote of thanks for the work which he did as chairman of the program committee. In closing this report PIT AND QUARRY wishes also to add its testimony to the value of the program. It feels that this convention has been the most successful which the National Crushed Stone Association has held, and realizes that a large part of this success both in the preparation of a satisfactory program and in getting out a large attendance has been due to Mr. Rockwood's efforts backed by the hearty support of the officers of the association.

Missouri Plant

We are showing herewith two cuts of the plant of the Highway Stone Company, Webb City, Missouri.

This plant is located one mile north of Webb City on land covered with the refuse from mining operations.

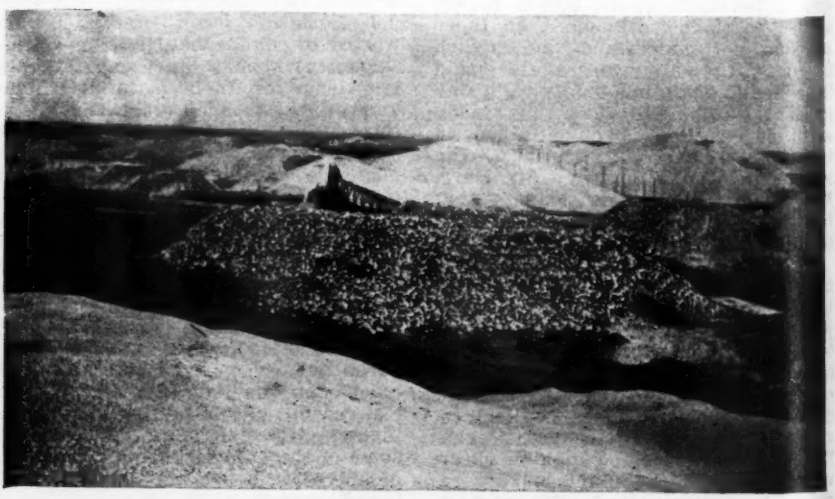


A Compact Plant

The material produced is known as lower sheet ground run being clean white and blue flint.

The new plant has a daily capacity of 500 tons of crushed stone and is on two railway lines.

Herr's quarries, Mountville, Pa., are maintaining active operations with a good working force. The company is said to have orders on hand for material to insure production for some time to come.



Vast Deposits of Material at Webb City

Agstone Association

Convention Was a Major Activity of a Busy Week

Officially, the National Agstone Association met in annual meeting in Chicago on Thursday of convention week and held its election. Semi-officially it held a delightful banquet on the previous evening. And unofficially it met at luncheon on two days of the convention of the National Crushed Stone Association. So the producers of agricultural limestone had plenty of opportunity to discuss their problems—and they did so to the fullest extent.

At the business meeting, E. M. Lamkin, the indefatiguable, was re-elected president, for the good of the industry and to the satisfaction of all concerned. Other positions on the roster also remained about the same, except that W. H. Margraf took the place of W. H. Hoagland as treasurer and on the board of directors, H. E. Bair took the place of W. M. Brown on the board, and the name of Harry Filer, Sr., of Grove City, Pa., was added to that body.

The Ohio group in the association pledged themselves to support an agstone fellowship at Ohio State University for a period of five years at a maximum expense of $2,000 per year.

Five new members were taken into the organization at this meeting.

The banquet on Wednesday evening was one of the most enjoyable events of the week. Good fellowship, oratory, agstone discussion, and the story telling lasted almost up to midnight.

A worth while contribution to the deliberations of the Crushed Stone Convention was made at the luncheon of the agricultural limestone producers at noon on Monday. At this meeting Edgar M. Lamkin, president of the National Agricultural Limestone Association, presided. During the progress of the meal there was considerable informal discussion among producers on many features of agstone production and marketing.

While these discussions between individual members were not held down to any particular program, they resulted in the exchange of much valuable information. For example, a producer from Salt Lake City sat between a quarry man from Missouri and a university professor, and many views were passed to and fro, which will, undoubtedly, influence a number of operations.

Lamkin Reviews Agstone

The first approach to anything like adherence to formal program was the talk given by President Lamkin, in which he reviewed the advances that have been made in promoting the sale of agricultural stone, and gave an idea of the field that the agstone producer has to work. He spoke of the matter of sizes, told how the finely divided product, while its cost makes it harder to sell, goes far to gain general acceptance for the use of agstone by farmers everywhere. He said that the most common means of discrediting the use of agstone is employed by producers when they sell coarse material and screenings for application on land. He drew attention, also, to the common mistake made by many producers of selling their product too cheaply, thus giving rise to the belief in the minds of farmers that agricultural limestone bought at such low cost is of little value.

In general, for the benefit of those who have not experimented much with this material, Mr. Lamkin touched upon the many features of production, the kind of stone that is most valuable, and the sizes which, when the stone is applied, are productive of the greatest effectiveness.

At the conclusion of Mr. Lamkin's talk, an interesting round table discussion was opened by Clyde Calvin of the Bessemer Limestone Company, Youngstown, Ohio. Mr. Calvin indicated briefly the kind of stone that his company is using and the means that it commonly employs to get the fine reduction necessary. A number of producers joined in with comments that were illuminating. Particularly so was the talk given by J. C. King, of the Carbon Limestone Company, Youngstown, Ohio, who has made quite a close study of agricultural limestone, and gave details of its value for certain crops, and the amounts that various growing plants take up. He told of how alfalfas take up 100 pounds of calcium to the ton, how soy beans and other leguminous crops use about 40 pounds to the ton, all of which depletes the ground just so much and makes it necessary to replace losses by some such means as the application of pulverized limestone.

Discussion of Sizes

Attention was directed during the discussion to the fact that the reason why the coarser sizes of agstone are, when applied, costly and relatively ineffective may be ascribed to the fact that a particle of limestone applied to soil neutralizes the soil for only a short distance from the stone and that, once this little neutralized zone has been completed, the effectiveness of the agstone ceases. This shows that the finely divided material is more readily available and gives quicker results.

R. S. Newman of the Lawrence Publishing Company of Cleveland, publishers of farm papers, gave some very interesting information, more from the farmer's point of view, but very useful just the same. Mr. Newman brought with him a number of maps and gave out some figures which showed the producers the present and potential markets for limestone. The first of these maps showed the way that the crushed stone industry is distributed, or, to be more exact, condensed in the United States. Another map showing the production of leguminous crops in those parts of the country in which there is a heavy limestone production, indicated the very important present and actual markets that the producer of agstone has before him. The speaker also told of potential markets afforded by certain sections of the country, notably the West, where the production of limestone is comparatively small, but where the acreage of leguminous crops is very large. He showed how, in the course of time, these western and southern sections that are not now using much lime, will require it, and advised producers who can turn out a marketable stone to lay their plans for the future as well as the present. His talk dovetailed well with a number of statements made by Mr. Lamkin in which the latter spoke of the present and future necessity for more lime in American soils. Mr. Lamkin referred to production of certain crops in Germany and England that go as high as 34 and 38 bushels to the acre respectively, while Ohio can produce only 14 bushels of the same crops to the acre. This discrepancy is largely due, as shown by Mr. Lamkin, to insufficient lime. Even China, whose impoverished fields are kept alive only as a result of great labor, has a production of 21 bushels to the acre of these crops.

There Are Alkalis and Alkalis

After this talk, the discussion started again, and a number of questions were asked and answered. One of these questions, propounded by Mr. Major of Salt Lake City, may give a number of producers some things to think about. He asked how limestone, which is alkaline in character, could be applied to fields in his projected market which are themselves alkaline in character. This question was answered by drawing attention to the fact that the materials which make the western fields alkaline are themselves true alkalis, based upon sodium, potasium, etc., while limestone is a member of the alkaline earth family and is just as effective in correcting true high alkalinity as it is in correcting too high a degree of acidity.

Valuable information on soil acidity was brought out by a discussion between the last speaker and Mr. King, in which the former touched upon the nature of the acids present in soil, showing how the term "humic acid" must be understood as merely grouping quite a number of complex acids produced by plant decay, etc.

After this began a discussion on chicken grits. Harry Brandon of Piqua, Ohio, threw considerable light on this subject, although he began his remarks by modestly disclaiming any knowledge at all of the subject. He spoke of the work that is done by his company in furnishing three sizes which are, roughly, $\frac{1}{16}$, $\frac{1}{8}$, and a scant $\frac{1}{4}$ inch, and told of the experimental work conducted by the company, in which they fed various grit combinations to flocks of chickens and carefully tabulated the results as to egg production, character of shell and condition of the fowls themselves. He stated that his company at one time did a very large business in chicken grits, furnishing the material to poultry feed concerns who mixed it in with the feed. As time went on, the business that these companies furnished became greater and greater, but it appears that they were abusing what should have been a benefit to poultry raisers. In other words, they were putting into their feeds too much grit and too little actual poultry feed, the grit content in many cases running as high as 50 per cent of the feed. State investigations did away with this abuse in many cases by setting down the amount of grit that could legally be mixed with feeds. In some states, this grit content

is set at 2 per cent, in others 3 or 4 per cent, but never in any case approaching the amounts used before legal notice of the abuse was taken. Thus, a market perished over night. At the present time, however, the company is selling more chicken grit than it did before, but is now putting out the product as such, in which condition it is usually sold the feed people. It is put up in 100 pound bags which average about $1.00, giving an income of $20.00 a ton on this material.

Chicken grit should contain a liberal proportion of calcium, which was formerly supplied by oyster shells commonly mixed with stones of small calcium content.

On the second day of the convention, arrangements had been made for a luncheon in territorial groups, but the sections as arranged for the first day proved so successful that the agstone and machinery sections were continued as before.

No Longer a By-Product

J. C. King of Youngstown, Ohio, presided over the agstone group, and started the program by telling one of his favorite stories in his most acceptable manner. Following this, he said that agstone is no longer in the infant class as byproduct, but that the time has arrived for producers to make it a profit-showing part of their business. He says that his company is selling agstone in bags at $5 a ton, regarding which one of his fellow producers at the convention told him that "Jesse James had nothing on him." As a matter of fact, he said that he is showing a profit of 22½ cents at this, as it is carefully prepared stone, 70 per cent of which passes 100 mesh.

Mr. King then introduced W. A. Ostrander of Purdue University, who gave some very helpful suggestions on co-operation between the colleges and the producers of agricultural limestone. He says that Indiana should have fifteen million tons of limestone spread over its farm lands just as soon as possible, and while the college men are going out to sell the farmer on the idea, the producers should follow them right up with salesmen to take their orders for limestone. He said that in cases where this has been done, it has shown remarkable results in the way of sales. He is confident that the problem in agricultural limestone is not one of price or size of material, but that it is just to get the farmer interested in using this material. He said he is not pleading with producers to make a low price, because a farmer can well afford to use limestone at the price at which it is now being sold; but what he wants more than anything else is to get the producer and farmer together and get them to doing business with each other. "We have talked limestone," said Mr. Ostrander, "in terms of limestone rather than in terms of what the farmer gets out of it. We should help the farmer to visualize the results which limestone will produce rather than simply talking about the material itself." He is very much in favor of lime bins at important centers in order to equalize distribution and provide against car shortage at the busy season of the year. "Every car of limestone," he said, "is worth twelve hundred dollars to the farmer."

Mr. Ostrander was followed by Professor Bauer of the University of Illinois, who gave a technical talk on the action of limestone on soil.

The Acme Cement Corporation, Catskill, N. Y., has arranged for an increase in capital from $1,350,000 to $2,800,000, a portion of the proceeds to be used for general expansion. Operations are being maintained on a good production basis, with employment of regular working force.

The Huron Portland Cement Co., Ford Buiding, Detroit, Mich., has arranged for the immediate rebuilding of its local storage and distributing plant at Atwater and Riopelle Streets, destroyed by fire, November 15, with loss of about $250,000, including building, stock and equipment. The new structure will cost about $100,000. The company's mill at Alpena, Mich., is operating full and heavy shipments are leaving the plant; it is expected to continue on the present basis for an indefinite period. J. W. Boardman is vice-president.

A new company to be known as the Ohio Portland Cement Co., has been organized under Delaware laws with capital of $3,000,000, to operate a cement mill in Ohio, the exact location of which is temporarily withheld. The company is represented by the Corporation Service Co., Equitable Building, Wilmington, Del.

The Quarry is a Family Affair

New California Plant

Producing White Limestone for Ornamental Concrete and Poultry Grits

The California Rock Products Company recently established a plant about twenty miles west of Los Angeles in Little Tejunga Canyon. The first unit of the plant will handle only white limestone rock, and is completed and the machinery installed. Regarding the plant the president of the company, Mr. Walter H. Packard, writes:

"The machinery includes a Dodge crusher with a capacity of 100 tons in 24 hours, a pair of Allis-Chalmers rolls (10x16inches), elevators, graders, etc., and four bins with a capacity of 50 tons.

"We are also building an addition to our main plant, 20x40 feet for storage.

"In this first unit we will grind only the white crystalized limestone to be used in Terrazzo, roofing and fines for coloring stucco, plaster moulds, etc., and our main product of limestone grit for chickens and other birds. This dolomite rock which we grind for chickens and birds will be in three sizes, for turkeys and geese; chickens; the baby chicks and caged birds. The small size will be put up in 2-pound cartons and shipped all over the United States.

"This product contains 66.8 per cent calcium carbonate which takes the place of the lime in clam and oyster shell now being used, and also contains magnesia and phosphate enough for a tonic; 75 per cent of this limestone is soluble and the balance, of silica acts as a grinder in place of granite grit now on the market. This product has been thoroughly tried out among large poultry raisers and orders from them will keep our first plant running to capacity.

The Plant

Hoosiers Show Optimisim

Indiana Sand and Gravel Producers Plan for Successful Year

The eighth annual convention of the Indiana Sand and Gravel Producers' Association, which was held in Indianapolis January 10 and 11, was an optimistic convention in every sense of the word. Optimism concerning the next year was expressed from the short address of M. A. Neville, president, who opened the convention, until the last remarks had been made at the close. The expression of speakers and those producers attending was that while the past year had been good, the next would be better yet.

At the beginning of the convention, President Neville made but a short talk, in which he outlined the work that had been done during the past year. Mr. Neville has been ill for some time and a fuller report was left to the secretary, R. C. Yeoman.

In his report Mr. Yeoman declared the volume of building and road construction, cash on hand by the public at large and the improved financial status of the farmer, all were contributing factors to his belief the industry would have a good business in 1923. He said the output of the members last year showed a material increase over the year previous. He gave the results of the rate cases which followed the last convention. In speaking of the withdrawal of the Indiana association from the National organization, he said the spirit of co-operation between the two had not been dampened in any way. His report showed three special meetings during the past year and several district meetings. He told of the profitable trip to the Wabash valley plants by H. F. Clemmer, engineer of tests for the Illinois State Highway Commission. During the year several concrete contractors made use of the facilities of the organization for securing proper advice on work.

A test of sand for agricultural purposes was made during the year in combination with humus for corn growing. The test was made on a Marion county farm in competition with fertilizers and lime. A road roller test for packing gravel roads was tried, but with indifferent success.

Because of the time and money required the experimental work with a screen for testing gravel by the wet method was cut short, but Mr. Yeoman hopes to continue this work this year. The laboratory work last year was much the same as the year previous. Experiments with tar and asphalt binders for gravel proved successful, according to the report for light traffic.

In his recommendations for work this year, he asked that a freight rate and car supply policy be outlined and something definite adopted on which to base activities. An advertising and educational campaign was urged. He advocated promoting better relations with the Illinois Highway Commission. Other recommendations were:

Design an exhibit to show the value of clean and screened sand and gravel.

The installation of a contractor's estimating service, where plans and specifications might be collected and quantities figured.

A new map of Indiana showing the location of plants.

Close co-operation with the American Society for Testing Materials, the American Concrete Institute, the Purdue road school, the state associations of county surveyors, road superintendents and county commissioners.

The compilation of a freight rate book.

The recommendations were referred to the executive committee with power to act and the advice given that action be taken as quickly as possible.

Because of the substantial condition of the treasury, it was voted to reduce assessments during the coming year by 50 per cent.

The nominating committee was composed of G. V. Miller, H. E. Neal, John Kuert and Abe Hart. Resolutions were in charge of a committee composed of E. Guy Sutton, D. R. Snyder and A. M. Brown.

At the luncheon which followed the first morning session the association had as guests Judge Lairy and Mr. Barnard and Mr. Gates, of the firm of attorneys which represents the organization, in the matter of car supply. Following the luncheon the convention reconvened and listened to a full discussion of the subject "Car Dis-

tribution by Law" by Mr. Barnard, setting forth the rights and privileges of the producers and the authority invested by congress in the Interstate commerce commission with reference to declaring emergencies and issuing priority orders. According to Mr. Barnard producers have several rights in the matter of car distribution which have not been judiciously exercised.

A lengthy round table discussion, concerning ways and means of securing these rights and privileges, in which the other two members of the firm entered, followed and resulted in a motion by which the secretary was instructed to secure from the attorneys the character of information to be collected and forms to be used by each producer in conduct of 1923 business so that the members will be fully prepared to act effectively and positively against the first recurrence of discrimmination in car supply.

G. J. Nattkemper, of Terre Haute, was unable to be present and the address he was to give was eliminated, the time being spent in discussing the car situation.

The nominating committee made the following report:

For president, J. A. Shearer, Indianapolis, president; vice president, L. R. Witty, Terre Haute, secretary-treasurer, A. M. Brown, Indianapolis. Directors, J. P. Coyle, Chicago, E. S. Baker, Noblesville and Abe Hart Sanborn of districts No. 1, 2 and 4 respectively.

The day following Mr. Shearer tendered his resignation as president, stating that owing to business conditions it would be absolutely impossible for him to devote as much time as would be required, and A. M. Brown was unanimously elected as president and his resignation as secretary-treasurer was accepted. Mr. Shearer was elected to the office of secretary-treasurer.

Numerous speakers on trade topics marked the second day's session. H. Colin Campbell, advertising manager of the Portland Cement Association, Chicago, spoke on "Advertising Raw Products."

"Our association follows the indirect method of advertising," he said. "Its purpose is to arouse interest of the public in finished products rather than in raw materials. By creating a desire for a finished product, sales of raw materials become automatic.

"Cement and gravel men have one great asset it is service. Let it be known that quality underlies your product. That would be a good opening gun in an advertising campaign. There is no industry that can not afford to advertise. It is not an expense, if rightly done, but is the wisest of investments. An advertisement of sand and gravel in the building page of a newspaper is not only effectively placed, but less space is required for the attention of the builder concentrates on that page."

S. C. Haddon, secretary of Allied Motors Commerce, spoke on "Needed Legislation for Financing the Indiana Highway Program." He said that more than $6,000,000 Federal-aid money is being held in Washington for Indiana roads but the state is not getting it for the reason that it does not raise the money to match the Federal aid available. "Indiana is falling behind in Federal aid at the rate of $750,000 a year and no prospect of catching up," he declared. "The only way to catch up is to raise more money for road building in this state and the most practical way for raising the money is to increase the automobile license fee and place a tax on gasoline. The Allied Motor Service has two bills ready to offer the legislature on these suggested remedies. If they are passed he said more than $10,000,000 additional will be given the highway commission."

At the noon luncheon, talks were given by Senator Eastman of Sanbord; A. H. Hinkle and W. J. Titus, of the Indiana Highway Commission; F. L. Catt, president of the County Engineers' Association of Indiana; Clyde Piper, president of the County Highway Superintendents' Association of Indiana, and W. M. G. Holland, of the Portland Cement Association. All dwelt on the things needed to secure better and more roads for Indiana.

The luncheon carried the meeting until late in the afternoon and the scheduled afternoon program was dispensed with. A short business session was held and the convention adjourned.

The Rockaway Sand & Gravel Co., of Inwood, N. Y., has been incorporated with a capital of $20,000. Incorporators: F. D. Licurse, A. S. Schurachio and F. Lavelle. Attorney, T. J. McGuir, Cedarhurst.

Indiana Stone Meeting.

Was Held in Chicago During National Convention

The Indiana Crushed Stone Association held a very enthusiastic meeting January 16th at the La Salle Hotel, Chicago, all members of the association being present.

Considerable time was spent discussing activities of the association for the coming year, after which there was the annual election of officers as follows:

President, C. E. Greely, Secretary and Treasurer Greely Stone Co., St. Paul, Ind.
Vice-President, B. L. McNulty, General aMnager Lehigh Lime Co., Chicago, Ill.
Treasurer, V. G. Pogue, President Spencer Stone Company, Indianapolis, Ind.
Secretary, Fred W. Connell, Indianapolis, Ind.
Executive Committee:—*Chairman*, E. B. Taylor, Manager Mid-West Crushed Stone Quarries Co., Greencastle, Ind.; L. H. Hawblitz, Assistant to Vice-President, The France Stone Co., Toledo, Ohio; V. G. Pogue, President Spencer Stone Company, Indianapolis, Ind.; J. E. Baney, Manager, Newton County Stone Co., Kentland, Ind.; Geo. H. Balfe, Manager, Monon Crushed Stone Co., Monon, Ind.

Fred W. Connell was re-elected executive secretary, serving his ninth year in this capacity.

First Aid in Wisconsin Quarries

Arrangements are being made by the Wisconsin Industrial Commission whereby the U. S. Bureau of Mines will give first aid instructions to men employed by the quarry and gravel pit operators. The meetings will be held during February and March. The following cities are centers for the quarrying industry and will be favored with the meetings: Racine, Milwaukee, Mayville, Menasha, Fond du lac, Green Bay, Janesville, Ablemans, and Wausau. The exact dates of the meetings are to be announced later as the car is laid up for repairs in Chicago.

The Orders on Safety in Quarries of the Industrial Commission provide that each quarry shall have two men competent to render first aid to an injured person. Eleven meetings were held last winter and 208 quarrymen received first aid certificates. Some of these men were able to render valuable services to those who were seriously injured in the quarries and gravel pits during the last summer. Quarries are as a rule located several miles from the nearest doctor and accidents often result in serious injuries.

The course of training consists of demonstrations in which the men themselves assist. The work is divided up as follows:

1. The proper methods of stopping arterial bleeding from cuts and wounds;
2. The proper and approved methods of applying bandages to various parts of the body;
3. The splinting of fractures;
4. Artificial respiration;
5. Proper transportation and care of injured during transportation.

Enter Manganese and Chrome Steel Field

The recent announcement of the Inland Engineering Company of Chicago concerning their entry into the manganese and chrome steel casting business, mentions a number of men whose names have been prominent in the manganese steel industry for many years.

Walter S. McKee, formerly vice-president and director of the American Manganese Steel Company, is president and treasurer of the new organization. His experience in the manganese steel business covers a period of 18 years.

Edward S. Black is vice-president, and is well known for his achievements in the designing of manganese and chrome steel castings for use in steel mills, ore docks and blast furnaces.

Eugene C. Bauer, vice-president, has had 16 years of sales experience in the manganese steel business, which includes a general knowledge of engineering and manufacturing.

J. W. Plant, also a vice-president, has devoted many years of his life to the manufacture and sale of carbon and manganese steel castings on the Pacific Coast.

With Alfred H. Exton as chief engineer, and Claude Rorabeck as consulting engineer, the company is able to offer to its customers an excellent engineering service, combined with a thorough knowledge of steel foundry practice which only comes through years of untiring effort and experience.

STONE

the MOST familiar object on earth, and yet, VERY FEW PEOPLE KNOW ANYTHING about the quality of Stone

The first impulse is to suppose that anybody can judge the grade and value of stone—and a great many people do presume to know about it—but those who have had the widest experience realize that there is nothing more difficult than to determine the quality and serviceability of this familiar composition of the earth. For some years the

ERIE STONE COMPANY

was engaged in stripping the top layers from the surface of their quarries and some of the product was less hard than others.

This Layer Has Been Totally Removed

And the stratum has been reached which furnishes to the consumer one of the MOST DURABLE STONES TO BE FOUND ON THE FACE OF THE EARTH. This strattum has the extraordinary depth of more than four hundred feet and consists of a perfect bed of HARD, TOUGH LIMESTONE.

We have studied the requirements of the Public, and with our modern equipped plant we are prepared to furnish our customers what they want when they want it in the line of crushed Rock Products.

SIZE NO. 1 is especially adapted for foundation course for Macadam and surface treated roads.

SIZE NO. 2 is often used instead of the coarser material in the foundation course for Macadam and surface treated roads; also is the one most extensively used for railroad ballast.

SIZE NO. 3 is used in the wearing course of surface treated roads, the size being especially adapted for the penetration of the asphalt or other preparation. This is also the one used in heavy concrete wall and foundation work.

SIZE NO. 4 is extensively used in repairing old gravel roads. The quality and cementing value of the material presents itself, for after a few weeks travel the stone becomes firmly embedded in the old road bed so-as-to-form a smooth, hard, durable surface—like surface which will withstand the hard usage of motor and horse travel

STANDARD SIZES

Our Size No. 1—2½ inches to 4 inches.
Our Size—No. 2 1½ inches to 2½ inches
Our Size No. 3—1 inch to 1½ inches.
Our Size No. 4—½ inch to 1 inch.
Our Size No. 5—½ to 3 inch.
Our Size No. 6—½ inch to ¼ inch.
Our Size No. 7—¼ inch to 0 inch.
Agriculture Limestone.
We can mix any of the above sizes in proper proportion to suit requirements

SIZE NO. 5 is especially adapted for concrete work, such as walls, cellar walls, garage floors and drives, curb and gutter work, etc. This material alone makes an excellent drive for light traffic and there is no excuse for having a bad drive from the damage to the street

SIZE NO. 6 is the one used on the "carpet coat" on surface treated roads, also in place of rooting gravel and for light repair work

NO. 7 is a clean, sharp limestone sand and its use is recommended by the State Highway Department of Ohio for concrete work any place where other sand or gravel of like specification can be used. The top of the ledge of limestone on which we are working is more than 40 feet below the original surface of the rock, and the product is absolutely free from clay or other foreign matter often found in the limestone sand of quarries working a surface cut.

AGRICULTURAL LIMESTONE is finely pulverized limestone testing high in Calcium Carbonate and Magnesium. The Agricultural Experiment Stations of Purdue University in using Pulverized Limestone exclusively in their work of correcting soil acidity and your County Agricultural Agent has recommended the use of Agricultural Limestone.

THE ERIE STONE COMPANY

C. W. McKEE, SALES MANAGER — HUNTINGTON, IND. — PHONE 431

Page Ad About Stone

Stone was the subject of an unusual page advertisement run by the Erie Stone Company of Huntington, Ind., when a paper in that city got out a special issue.

The advertisement proceeded to say:

"The first impulse is to suppose that anybody can judge the grade and value of stone—and a great many people do presume to know about it—but those who have had the widest experience realize that there is nothing more difficult than to determine the quality and serviceability of this familiar composition of the earth.

"For some years the Erie Stone Company was engaged in stripping

the top layers from the surface of their quarries and some of the product was less hard than others. This layer has been totally removed and the stratum has been reached which furnishes to the consumer one of the *most durable stones to be found on* the face of the earth. This stratum has the extraordinary depth of more than four hundred feet and consists of a perfect bed of *hard tough limestone.*"

Then the bottom half of the page is divided into little panels each telling of the uses of the seven sizes and also of agricultural limestone. Another panel gives the seven standard sizes.

It is educational advertising of a type not often seen and as it was attractively set up got attention.

News Items

The Gypsum Products Co., of Alamogordo, N. Mexico, has been incorporated with a capital of $100,000. The incorporators are J. G. Barrett and J. W. Fetz of Alamogordo and C. L. Beatley, of Long Beach, Calif.

Lake Weir Crystal Sand Co., Ocala, Fla., has been incorporated with a capital stock of $25,000. Officers and directors: Nathan Mayo, president; L. W. Duval, vice-president; Dempsey B. Mayo, secretary and treasurer.

The Morgan Sand & Gravel Company, Brooklyn, N. Y., has increased its capital from $25,000 to $50,000.

The Fort Worth Sand and Gravel Co., Fort Worth, Texas, has been incorporated with a capital of $200,000. Incorporators: R. M. Quigley, H. P. Bonner, J. O. Hart.

The Mississippi Lime & Material Co., of Alton, Illinois, has plans under way for the erection of a modern, fire-proof office building, construction on which will be begun at an early date.

The Shepherd Sand and Gravel Co., Shepherd, Texas, have increased their capital stock from $13,000 to $40,000.

The erection of an immense plant is planned by the Arizona Portland Cement Co., of Phoenix, Arizona, which was recently organized with a capital of $1,000,000.

The Eyre Gravel Co., Seattle, Washington, has been incorporated with a capital of $200,000. Incorporators: E. G. Helgesen, A. C. Peters and R. H. Evans.

One thousand acres of land, southeast of Oakfield, N. Y., has been purchased by the United States Gypsum Company, to provide for future mining developments.

The Yahola Sand and Gravel Co., of Fort Gibson, Okla., has commenced work on its new plant at Tuskogee, Okla. Orders for machinery and equipment have been placed and when the plant is completed, sand and gravel to meet any specification can be produced.

The Cape Fear Gravel Pits, Inc., has been organized at Lillington, N. C. and will immediately begin the mining of gravel and the manufacturing of cement products on a large scale. The home offices of the company will be in Lillington, but general sales offices will be maintained in Raleigh, N. C. and Richmond, Va. The officers of the Cape Fear Gravel Pits, Inc., are: President, C. W. Lacy; Vice-president, T. H. Higgs; Secretary, H. R. DeLorme; Treasurer, J. C. Blanchard.

The Monroe Sand and Gravel Company has been organized at Monroe, La., with a capital of $25,000. This company proposes to operate the Ouachita gravel beds which are among the richest gravel beds in Louisiana. The board of directors consists of T. E. Stephenson of Monroe, who is also president, J. A. Stephenson of Shreveport, vice-president and R. O. Randler of Monroe, secretary and treasurer.

The Cook County Sand & Gravel Co., Chicago, Ill., has recently been incorporated to deal in building material and products. Incorporators: Geo. F. Leibrandt, Chas. A. White, and Oscar W. Rosenthal. The company maintains offices at 224 S. Michigan Avenue.

Edward F. Alden, of Capay, California, has plans under way for the installation of a gravel pit on Cache Creek, not far from the town. It is planned to construct a washing plant, where the gravel will be washed, graded and placed in bins.

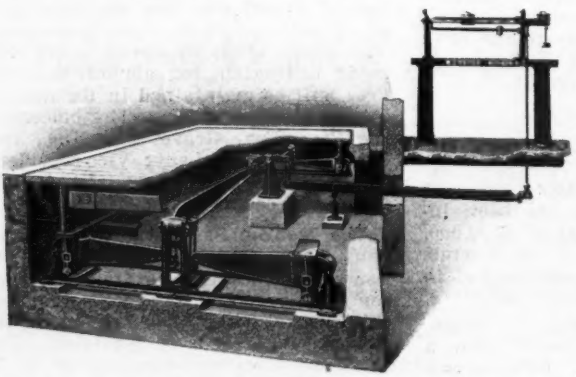
The Sun Portland Cement Co., Portland, Oregon, recently organized with a capital of $1,000,000, are planning to establish a plant at Home, Idaho, on the Oregon side of the Snake River, with a capacity of 1,000 barrels daily. The officers of this company are H. A. Ross of Victoria, B. C., president; L. C. Newlands, vice-president; Geo. L. Macdonald of Portland, secretary and H. L. Knappenberger of Home, Idaho, treasurer.

Motor Truck Scales

Some of the big eastern stone quarries have recently installed motor truck scales, manufactured by Wm. S. Meyer and sold by the Edwin A. Meyer Sales Company, 473 Washington St., Newark, N. J.

These scales have a capacity of 25 tons and are of suspended, all-steel platform construction, 9x20 feet in size.

The levers of this scale are on delicate knife edge suspensions and the



beam, as stated by the manufacturers, will turn in one ten-thousandth of its capacity.

All bearings have heavily reinforced with metal backing and the bearing blocks are removable and easily replaced. The design is such that the knife edge and bearings are in continuous contact, regardless of any movement of the platform, guaranteeing long life, sensitiveness and accuracy. It is equipped with full compound beam and office stand.

Book on Spiral Pipe

An extensive catalogue on spiral riveted pipe has just been issued by the American Spiral Pipe Works, 14th St. and 48th Avenue, Chicago.

The initial pages of the catalogue are devoted to a description of the method of producing Taylor's spiral riveted pipe, which has for many years, been in use in the various industries. The pages following show photographically many of the most notable installations of this pipe, with the expressions of appreciation from the users.

The catalogue is also so constructed mechanically, that one may instantly turn to the price lists which have been grouped in the most logical order, a feature which will be much appreciated.

Several pages of the book have been devoted to an excellent collection of valuable hydraulic tables and charts.

The book also includes reference to some of the more recently developed lines of this company, such as forged steel flanges, large diameter forge welded pipe, etc. This book is being sent out free to the trade.

Announcement

The Standard Conveyor Company, North Chicago, Ill., announces that it has acquired by purchase all the rights, titles and patents pertaining to the well-known "Brown Portable" line of portable and sectional piling, elevating, conveying, loading and unloading machinery for the handling of packed and loose materials.

This line of machinery has been manufactured by the Brown Portable Conveying Machinery Company at North Chicago for ten years. Until further notice the plant will be continued in operation by the Standard Conveyor Company.

The Mackintosh Engineering Company, located in the Schofield Bldg., Cleveland, have been appointed agents for the Brownhoist small cranes, buckets and storage bins for the state of Ohio, with the exception of Hamilton County.

The Chain Belt Company, Milwaukee, announces the appointment of Fitch S. Bosworth as manager of the Chicago Office, effective January 1st. Mr. Bosworth has been in charge of the Chain Belt Company's St. Louis office for the last three years and has specialized on chain and conveying engineering problems. With him will be associated Raymond X. Raymond who for several years has been connected with the Export sales department in Milwaukee. Thomas F. Scannell, formerly of the Chicago office has been placed in charge of the St. Louis office.

A New Shovel

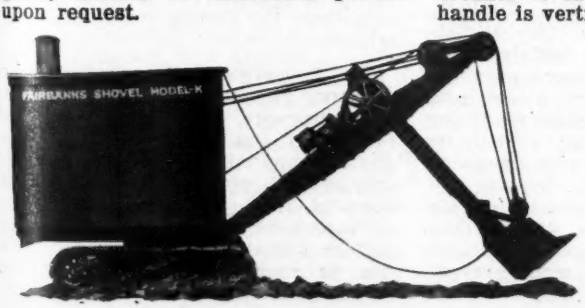
The Fairbanks Steam Shovel Company, Marion, Ohio, has recently brought out a new ¾-yard contractors' shovel known as Model K.

This new machine is complete in every detail, but at the same time is simple in design and operation and rugged and well proportioned in construction. Full revolving swing, flexible endless tread traction. Fairbanks submerged tube A.S.M.E. boiler, reversing valve engines, two speeds of travel, insuring positive and economical moving, power boom hoist—to change standard boom immediately to any angle, power steering device—operated from cab, is regular equipment with this new shovel. It is also adapted for electric or gasoline engine power, as well as steam.

Another new feature used with Model K shovel is the horizontal digging boom and dipper handle. This boom arrangement is particularly adapted to road and street construction and stripping. A much longer reach and dumping range can be obtained with this boom, and the highest trucks and wagons can be easily loaded.

The boom arrangement is the only difference in design from the standard Model K, and change from one type of boom to the other can be quickly made on the job. In this model the user has his choice of power for operation and also boom arrangement with very little variation from the standard machine. These shovels are making some excellent records and the company is in receipt of some very complimentary letters from men using this shovel.

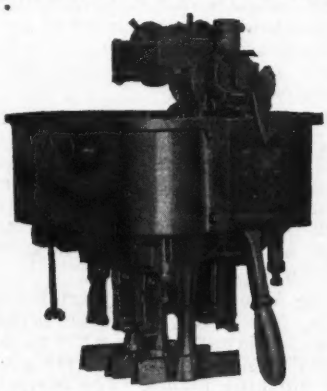
A new circular on this shovel No. K-10 has just been issued and will be gladly mailed to interested parties upon request.



New Oil Circuit Breakers

A new line of oil circuit breakers, the type F-10 designed primarily for industrial applications, such as in mines and in textile, cement, and flour mills, has been placed on the market by the Westinghouse Electric & Manufacturing Company.

The new breakers are of moderate interrupting ability and are made in capacities up to 200 amperes at 2500 volts and 300 amperes at 750 volts. They are wall-mounting breakers, designed for indoor service only. As they are dust-proof and drip-proof, they



may be used in textile, flour and cement mills where dust is encountered and in mines where there is excessive moisture.

All type F-10 breakers are manually-operated and may be either non-automatic or automatic. The breaker is held in the closed position by a hardened steel roller, which is tied on the trigger so that when the trip coil is energized the triggger is raised, disengaging the latch and allowing the breaker to open. When the breaker is used non-automatic, it is tripped by raising the closing handle. When the breaker is in position, the operating handle is vertical and when the breaker is opened, the handle is raised slightly. It is thereby possible to determine the position of the contacts by the position of the handle.

Automatic operation is obtained by the addition of one or more automatic trip attachments.

Recent News Notes

The Liberty Marble Co., 80 Granite Street, Boston, Mass., has work under way on a new one and two-story plant, 80x122 feet, comprising shop and office building, in the Dorchester section, estimated to cost about $25,000. Equipment will be installed for polishing, finishing, etc.

There has been a marked improvement in the slate industry at Monson, Me., and vicinity during the past six weeks. A number of quarries which have been shut down owing to lack of orders have reopened, and business in hand indicates that full production can be continued for a number of months. The Monson Slate Co., is drawing heavy on the supply from the local quarries.

The Eastern Marble Co., Rutland, Vt., has arranged for a bond issue of $525,000, a portion of the proceeds to be used for general expansion in operations and business. The company has been maintaining production at its plant at good status, with large working force.

The American Black Marble Corporation, New York, has been organized under Delaware laws with a capital of $200,000, to operate marble quarries and finishing plants. The company is represented by the United States Corporation Co., 65 Cedar Street, New York.

The Gomez Granite Corporation, 1974 Broadway, New York, has arranged for an increase in capital from $100,000 to $250,000, a portion of the proceeds to be used for proposed expansion.

The Albany Gravel Co., Albany, N. Y., has been organized under state laws with a capital of $50,000, to operate sand and gravel properties in this section. The company is headed by C. W. Maxwell and G. K. Smith. It is represented by Ainsworth, Sullivan, Wheat & Archibald, attorneys, Albany.

The Lautz Marble Co., Buffalo, N. Y., has work in active progress on its new plant on East Ferry Street, and expects to have the structure ready for service at an early date. It will be one-story, 110x480 feet, with two-story office, adjoining, 40x88 ft., forming one of the most complete plants of this kind in this section. It will be equipped with grinding, cutting and polishing machinery of modern type. R. K. Glass is president.

The Morgan Sand & Gravel Co., Brooklyn, N. Y., has arranged for an increase in capital to $50,000, for general expansion.

The Quality Sand & Gravel Co., Springfield, Erie County, N. Y., has been formed under state laws with a capital of $100,000, to operate sand and gravel properties in this section. The company is headed by D. H. Ames, S. G. Engel and P. W. King, all of Springville. It is represented by Scott & King, Springfield, attorneys.

F. E. Waite, Inc., Albany, N. Y., has been organized under state laws by F. E. Waite and associates, with capital of $12,000, to operate a stone quarry in this vicinity. Others interested include A. Bran and P. E. McCabe. Extensive production is planned. The company is represented by S. E. Aronowitz, Albany.

The United States Gypsum Co., Oakfield, N. Y., has added to its holdings in this section, comprising about 1,000 acres of farm land, heretofore held by Judge Edward A. Washburn; title has just been taken. A vein of gypsum extends under the property, and extensive development work will be placed in progress at an early date. New York offices of the company are at 1170 Broadway.

The quarry properties of the Koons Lime Stone Quarry, Camp Hill, Cumberland County, Pa., and the Williams Grove Quarry, Carroll Township, York County, Pa., will be disposed of by S. E. Vance, receiver, Chestnut and Marion Streets, Camp Hill. The quarries and equipment are said to be under profitable operation at the present time, being leased by the respective companies.

The Pennsylvania Construction, Stripping & Quarry Co., Hazelton, Pa., has commenced operations in the vicinity of Cranberry, Pa. A new stripping will be developed for local interests.

The Coopersburg Granite Co., Coopersburg, Pa., is being organized by local interests, including A. W., and Charles D. Bradford, and Victor Riu. The company will soon take out a state charter and propose extensive operations on local property. A complete cutting, finishing and polishing plant will be operated. The new organization is represented by C. William Freed, Quakertown, Pa.

One-Man Shovel

A miniature steam shovel, so versatile and easily handled as practically to eliminate hand loading in quarries and mines, is made by the Hoar Shovel Company, Duluth, Minn.

The shovel is fully revolving—capable of duplicating any action of the steam shovel—and requires but 6 ft of headroom and a width of 6 ft. in which to operate. Power is supplied by three reversible Dake motors operating by compressed air or steam. Use of these reversible motors makes it unnecessary to employ clutches and gives a quick, positive action.

Operation is through three levers directly in front of the operator, who can see every movement of the dipper. The dipper itself, patterned after the standard steam shovel dipper, is fastened to a dipper stick which is in turn connected to a double floating dipper

stick that permits flexibility in cleaning up a rough bottom and allows the dipper stick to be racked back over the body of the machine before swinging in congested places. When dumping, the crowding engine shoves the dipper sticks out in a horizontal position over the car and then racks it back again to the body position for the return swing.

One man is all that is necessary to operate, the shovel doing its own cleaning up, trimming of cars and propels itself over short distances by dropping the dipper against the side of the drift or on the ground and crowding out. The saving this machine will make over hand labor is calculated at 50 per cent and the speed of the loading operation increased nearly as much.

Month's Sale of Explosives

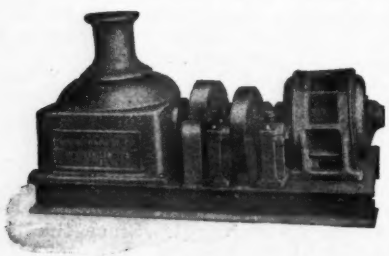
Reports made to the United States Bureau of Mines from manufacturers of explosives in the United States show that sales during October were slightly below the September record in the case of black powder and permissibles but that sales of dynamite and other high explosives increased somewhat over the previous month. The reports for October indicate total sales of 793,105 kegs of black powder, 4,692,050 pounds of permissibles, and 18,139,118 pounds of other high explosives. Total sales of black powder for the first ten months of 1922 aggregate 4,725,343 pounds, which is 7 per cent above the corresponding period last year, but 43.5 per cent below the record for the first ten months of 1920. Of the total quantity of black powder sold thus far in 1922, the coal mining industry has consumed 84 per cent and other kinds of mining have used 3 per cent. The remaining 13 per cent was used for construction purposes and miscellaneous classes of work. During the first ten months of the current year, 29,788,377 pounds of permissibles have been sold for use in the United States, representing a loss of 2.5 per cent below the corresponding period last year, and a loss of 34.0 per cent below the same months in 1920. Of this quantity coal-mining has consumed 91 per cent, while other classes of mining work have used 4.5 per cent. Construction and miscellaneous work used the remaining 4.5 per cent. Since the beginning of the present year, 158,515,562 pounds of high explosives have been sold for use in the United States, representing a gain of 15.0 per cent over the corresponding period last year, but a reduction of 19.9 per cent from the ten-month record in 1920. The metal-mining industry is the largest single consumer of this class of explosives, nearly 40 per cent of the ten-month sales in 1922 having been used in metal-mining operations. Coal mining has used about 11 per cent, railroad and construction work 12 per cent, and miscellaneous work 37 per cent.

Gunite as a Fire Preventive

Tests made by the Bureau of Mines at the University of California, Berkeley, Cal., indicate that Portland cement-gunite will stand up in a hot fire. The guniting of timbers will prevent the starting of a mine fire in, or the spread of flames through, the gunited section. The magnesium-oxychloride-cement-gunite slabs did not stand up under the fire test; the gunite crumbled to powder and scaled off, permitting the slabs to ignite. It is reasonable to conclude that headframes, shaft collars, shaft timbers, shaft stations, in fact all timbering permanent underground workings—including mule barns, ventilation doors, power stations, hoist stations, timbered haulage-ways, and fan stations—can be effectively fireproofed by gunite coatings. On the surface, transformer houses, assay offices, powder magazines and other buildings can be fire proofed by gunite coatings; or the building can be made entirely of reenforced gunite.

Handy Car Puller

The Mining Machine Company, Mountville, Pa., has on the market a



serviceable, compact car puller, for the spotting or replacing of cars, either loaded or empty.

A bulletin issued by the company shows types and sizes to meet many different needs.

Mr. A. R. Ulbrich, formerly sales manager of the Terry Mfg. Co., Inc., has been appointed sales manager of the National Hoisting Engine Company of Harrison, New Jersey. He assumed his new duties January 1st, 1923.

Improve Sturgeon Bay Quarry

Extensive improvements are now being carried out at the Leathem D. Smith Stone Company's mammoth quarry at the mouth of Sturgeon Bay, Wis. When the present plans are carried out the plant will be one of the best equipped and largest in the Great Lakes region.

One of the big improvements is the installation of a 200-ton McCully gyratory crusher, which has a capacity of from 700 to 1,400 tons of stone per hour. The production of the plant with its present equipment is about 150. This crushing outfit will do away with the usual reblasting.

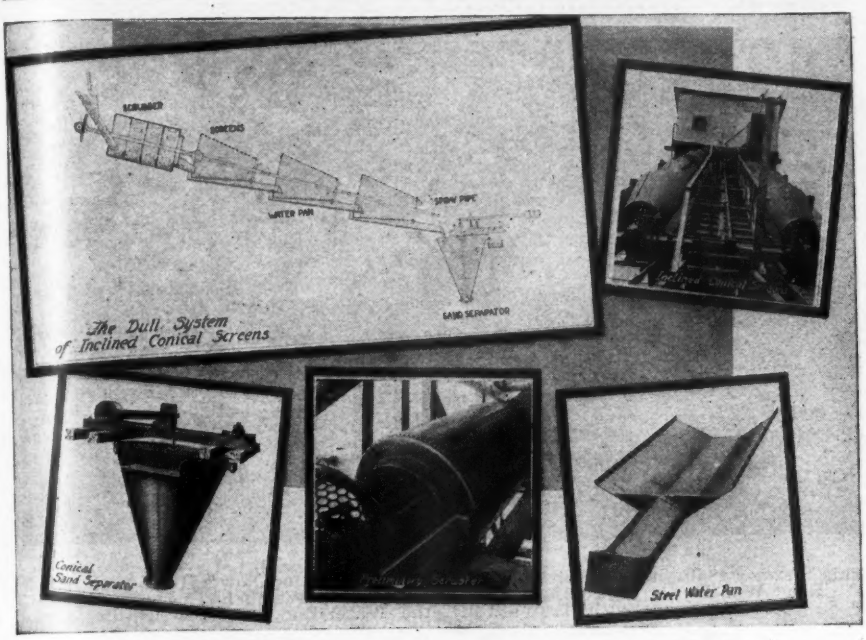
Another large steam shovel will be added. Additional graders and electrically controlled conveyors will carry the various sized stone to its proper storage space. The entire plant will be electrically driven.

Over eighteen million dollars worth of minerals was taken from Alaska mines in 1922, which brings the output back to figures of almost the prewar magnitude. According to estimates made by Alfred H. Brooks, Chief Alaskan Geologist, United States Geological Survey, the value of the mineral output of Alaska in 1922 was —gold, $7,720,000; copper, $9,000,000; silver, $730,000; and coal, $450,000; the total value, including that of lead, platinum, petroleum, marble, and gypsum, was $18,250,000, compared with $17,000,000, the value of the output in 1921.

S. W. Lindheimer, dealer in Railroad and Contractors Equipment, Chicago, sailed on January 6th on the Majestic for England, to develop a large deal in pending for some time.

The Directors of Gifford-Wood Co., Hudson, N. Y., at a recent meeting appointed Joseph A. Boucher to the position of sales manager to become effective at once.

The Merrell Quarry Co., Box 457, R. R. No. 3, East St. Louis, Ill., has been incorporated with a capital of $6,000. Incorporators: Spencer A. Merrell, Lela C. Merrell and J. P. Wharry.



GET YOUR EQUIPMENT READY FOR SPRING

BE ready to start operations as soon as spring opens up.

A bit of planning during the winter months, for replacements and additions, will mean maximum production when your plant starts next season.

The Link-Belt Company builds sand and gravel handling equipment that assures a high grade product.

Link-Belt equipment has proven its sturdy qualities and efficiency in production in hundreds of plants, and deserves your consideration when you buy new units.

Link-Belt experienced engineers will be glad to assist you.

Send for Book No. 440

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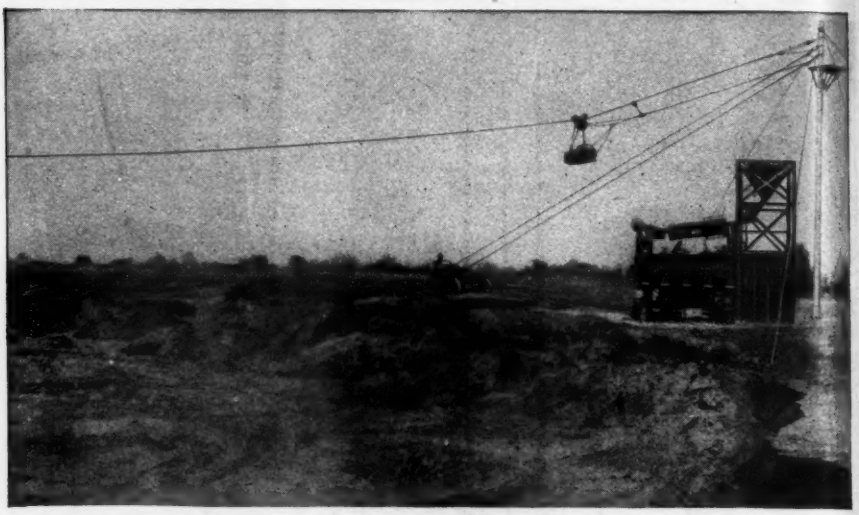


This Shows a Sauerman "Junior" Cableway with Gasoline Power Unit Mounted on Road Wheels. It is opening up an Abandoned Pit Which had been Worked Previously with Teams Until the Water-line was Reached

"Junior" Cableway

For light material-handling, such as excavating gravel for road-building, digging marl, handling sand at concrete products plants, and so forth, Sauerman Bros. announce a new model cableway with gasoline or belt drive hoist mounted on road wheels.

The new machine is called the Sauerman "Junior" cableway and is manufactured in three sizes, with 6, 9 and 13 cu. ft. buckets. All have operating spans of 300 ft.

While the new machines are low in cost, they are said to be equal to the standard Sauerman dragline cableway excavators in design and construction, only they are lighter and semi-portable.

Complete information on the "Junior" cableways, including specifications, is given in Bulletin No. 123 just issued by Sauerman Bros., 434 S. Clinton St., Chicago, who will send copies free to all who so request.

Recent Patents

The following patents of interest to readers of this journal recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trade-mark attorney, Continental Trust Building, Washington, D. C., at the rate of 20 cents each. State number of patent and name of inventor when ordering.

1,439,216. Power-shovel. Edwin J. Armstrong, Erie, Pa.

1,439,252. Coal screening and washing machine. William F. Martin, Wormleysburg, Pa.

1,439,431. Coal-washer jig. Louis MacKenzie and William Richardson, Jr., Ensley, Ala.

1,439,754. Crusher and pulverizer. Harold M. Plaisted, S. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., same place.

1,439,781. Crusher. Milton F. Williams, S. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., same place.

1,439,800. Mammer-rod for crushers. William M. Davidson, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., same place.

1,439,872. Cage-partition plate for crushers. William M. Davidson, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., same place.

1,440,212. Base for dipper-teeth. John F. Devlin, High Bridge, N. J., assignor to Taylor-Wharton Iron & Steel Co., same place.

1,440,429. Breaker-plate for crushers. Arthur F. Williams, St. Louis, Mo., assignor to Williams Patent Crusher & Pulverizer Co., same place.

KENNEDY BALL BEARING GEARLESS CRUSHERS

WHY THEY LEAD

1—They are noiseless and run like watches.

2—50% greater capacity for same power.

3—Practically no wear on anything but head and concaves.

4—Short shaft and saving in head room with packed dust collars.

5—Shaft reinforced with self-locking head so that it cannot break where 90% of shafts have broken.

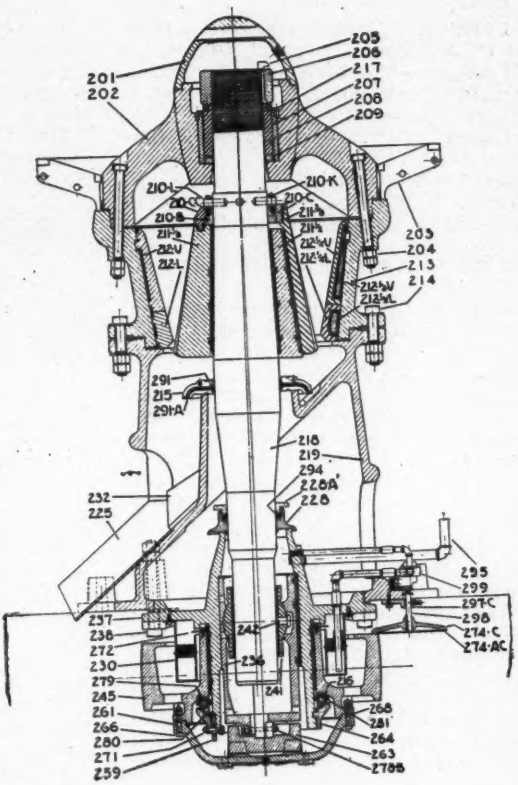
6—Can be driven right, left, or standard, as sent from shop.

7—Eccentric is turned by flexible coupling attached to pulley, which prevents side thrust and heating, as in geared crushers.

8—Ball and socket eccentric, self-aligning, eliminating friction and heating. Runs for years without attention.

9—Positive circulating oil system through filter and cut geared oil pump.

10—Made in our own shop by experts, trained for the job.



11—It is a crusher with the trouble left out. See it in operation, and you are unfit to listen to any geared crusher salesman. In fact, if you are near one of his machines, you can't hear him, if you were so inclined.

12—Our fine crusher does the work of 4 geared crushers.

Send for catalogue and tell us what your problems are, and one of our experts will call on you without obligation on your part.

KENNEDY VAN SAUN MFG. & ENGR. CORP.

120 Broadway **NEW YORK**

CIE. DES. ENTERPRISES INDUSTRIELLES, PARIS

Recent Patents

The following patents of interest to readers of PIT AND QUARRY recently were issued from the United States Patent Office. Copies thereof may be obtained from R. E. Burnham, patent and trademark attorney, Continental Trust Building, Washington, D. C., at the rate of 20c each. State number of patent and name of inventor when ordering.

1,435,920. Loading-machine. Robert P. Greenleaf, Cleveland, Ohio.

1,436,101. Crushing and pulverizing machine. Joseph L. Hiller, Mattapoisett, Mass.

1,436,338. Crusher. Charles I. Carman, New York, N. Y.

1,436,347. Crusher. George E. Krider, Hollidaysburg, Pa., assignor to McLanahan Stone Machine Co., same place.

1,436,470. Rock-drill. Joseph Beaudry, Philadelphia, Pa.

1,436,590. Mill or machine for grinding or pulverizing ore and other materials. Ralph Hush, Johannesburg, Transvaal, South Africa.

1,436,638. Air-feed control for rock-drills. Lewis C. Bayles, Easton, Pa., assignor to Ingersoll-Rand Co., Jersey City, N. J.

1,436,737. Safety device for steam shovels. Lee Trower, Wilkinsburg, Pa.

1,437,392. Grab-bucket. Henry W. Botten, Lakewood, Ohio, assignor to Owen Bucket Co., Cleveland, Ohio.

1,437,526. Mining and loading machine. Nils D. Levin, Columbus, Ohio, assignor to Jeffrey Mfg. Co., same place.

1,437,545. Combination excavator and pile driver. Joseph Perna, Philadelphia, Pa.

1,437,594. Excavating-machine. Stephen Kelly, Louisville, Ky.

1,437,669. Coal-screening and washing machine. William F. Martin, Wormleysburg, Pa.

1,437,755. Rotary drilling apparatus. Edgar E. Greve, Bellevue, Pa.

1,437,863. Feeding device. Fred I. Raymond, Evanston, Ill., assignor to Raymond Brothers Impact Pulverizer Co., Chicago, Ill.

1,437,963. Excavating-bucket. Samuel Dyke, Houston, Tex.

1,438,001. Reversible dipper-tooth. Lesher W. Van Buskirk and Philip W. Porter, High Bridge, N. J., assignors to Taylor-Wharton Iron & Steel Co., same place.

1,438,125. Coal screening and washing machine. William F. Martin, Wormleysburg, Pa.

1,438,126. Self-dumping screening and washing machine. William F. Martin, Wormleysburg, Pa.

1,438,183. Conveying apparatus. Louis E. Laurent, New York, N. Y., and James C. Patterson, East Orange, N. J.

1,438,332. Excavator. Charles H. Ruth, Huntington Park, Cal.

1,438,608. Excavating cableway. Thomas S. Miller, South Orange, N. J.

1,438,701. Drag-line excavator. Joseph F. Fitzpatrick, Worcester, Mass.

1,438,752. Power-shovel. Henry L. Doering, Erie, Pa., assignor to Ball Engine Co., same place.

Raise Capacity to 5,000 Pounds

At a recent meeting of the directors of the Southwestern Portland Cement Company, decision was reached to enlarge the present capacity of the plant to 5,000 barrels per day, making it one of the largest plants in the west.

The contemplated plans for the enlargement of the plant include the installation of another kiln, a new rock crushing plant, new finish mill, enlarging of the clinker bins, installation of an electric crane for handling clinker in place of the steam crane now employed, enlarging of the power-house to accommodate the extra motors required for driving the new mills, the construction of four more new slurry tanks, and a number of other small alterations.

Work has already been started on the foundations for the extension of the mill building, and workmen will soon be busy preparing the heavy cement supports for the new kiln, which has been ordered in the east.

The International Cement Co., 1834 Broadway, New York, is maintaining a heavy rate of production at the former mill of the Knickerbocker Cement Co., acquired about a year ago. The plant has been entirely remodeled and improved, and considerable additional machinery installed for greatest economy and efficiency in manufacture. The company has shown a steady progress in the line of earnings during the past year and is said to have accumulated over $1,000,000 in bank balances with no current liabilities.